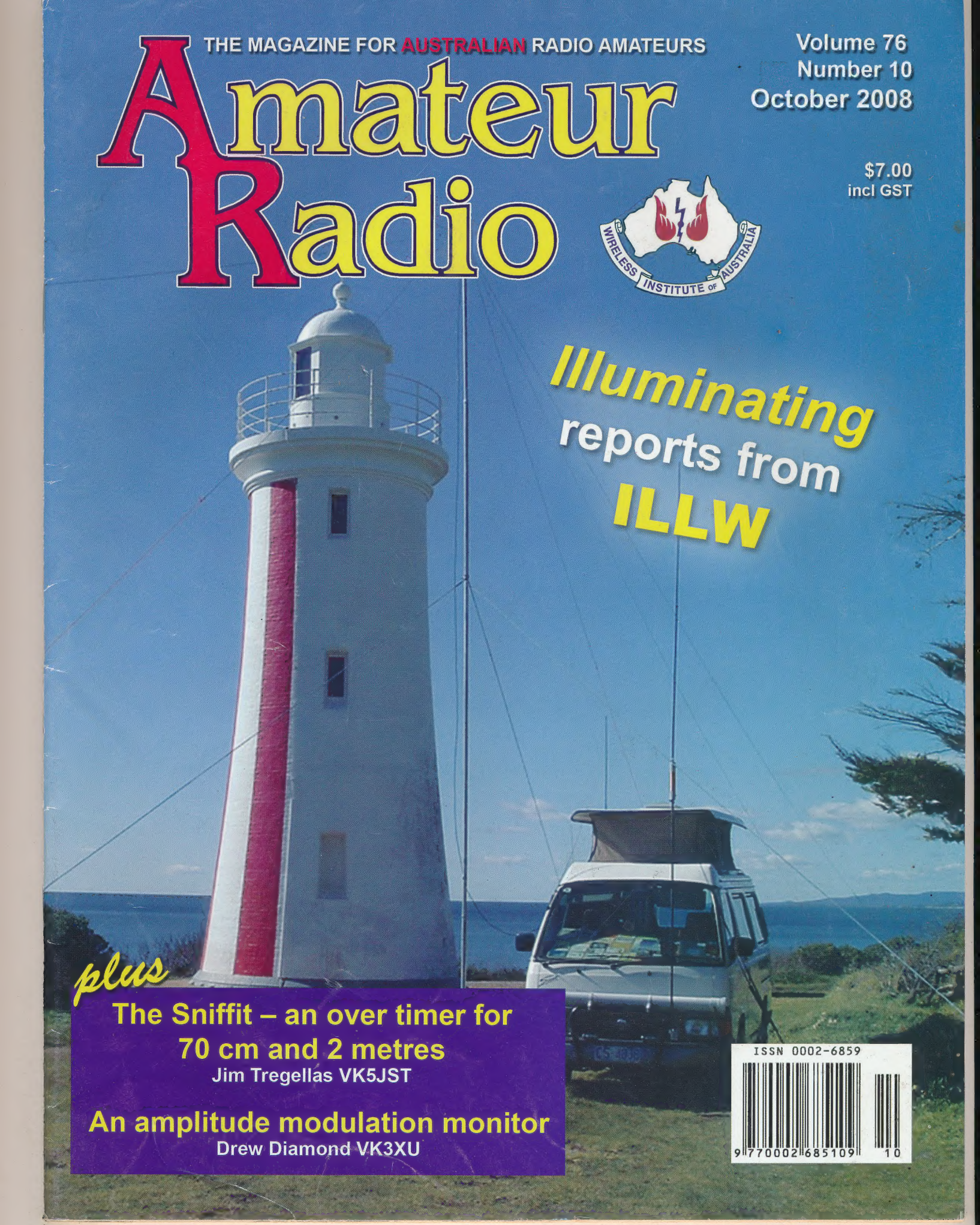
THE MAGAZINE FOR AUSTRALIAN RADIO AMATEURS

Amateur Radio

Volume 76
Number 10
October 2008

$7.00
incl GST



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Jim Tregellas VK5JST

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Amateur Radio

Volume 76, Number 10
October 2008

The Journal of the Wireless Institute of Australia
ISSN 0002-6859

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Production Deadlines

General articles, columns and advertising booking 10th day of previous month.
Hamads and advertising material 15th day of previous month

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Our Cover this month

With permission from the Devonport City Council to camp at The Mersey Bluff and with a key to the reserve, Winston VK7EM was able to set up his station next to the lighthouse and participate in the ILLW from a location with a million dollar view! Story on page 23.

Photograph by Winston Nickols VK7EM.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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The Australian Amateur Radio Service

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Editorial comment

Peter Freeman VK3KAI

A stalwart retires

At the September meeting of the Publications Committee (PubCom), long-standing member Ron Fisher VK3OM announced that he was retiring from the Committee.

Ron has had a long involvement with the publication of Amateur Radio magazine, commencing from 1954. He retired from the Committee for a short time in the late 1960s, but was persuaded to return after a break.

As well as providing insightful contributions to discussions at our meetings, Ron has published many reviews of equipment and a variety of other articles over several decades. His knowledge of older equipment has been shared at times in articles outlining some of the veteran gear that is still very useful in the shack. In addition, he has played a key role in the preparation process of Hamads in each issue of AR.

Some months ago, Ron had suffered an accident in the garden which resulted in surgery and the ensuing recovery process. Forced to slow down considerably, Ron has recognized that he is no longer as young as he may have felt. He has decided that many tasks will need to be tackled in a different manner, perhaps even left to others. As part of his considerations, Ron decided that the monthly travel at night to the PubCom meetings was one undertaking that could, reluctantly, be dropped.

President Michael Owen VK3KI and the members of PubCom all thanked Ron for his extensive contributions and wished him well in his retirement from this activity. Ron did indicate that he is willing to continue the checking of Hamad material prior to publication, so he will still be making a regular contribution. Of course, you cannot keep a good man down – he also remarked that he may still prepare the occasional article for publication.

As Editor, I thank you Ron for all your work – it has been most valuable during my tenure in this position. I am sure that all readers will join me in wishing Ron the best for all that is still to come.

Callsigns

By now, many amateurs will be tackling the task of adopting a new habit – using a new callsign. The ballot for two letter callsigns has been completed and I have already heard some on air. Of course, it will be not only the new callsign holders attempting to learn the new callsign, but many of their regular contacts will also need to change their habits!

It is hoped that most of the processing of the resulting changes will by now be completed, as we have just taken a critical step in the preparation of the next Callbook – the ordering of the database information from the ACMA.

If you end up without your callsign in the next Callbook, just remember that it can only reflect the information as it exists at a single date – that is always a constraint of a printed publication.

Readers are reminded that it is their individual responsibility to promptly notify the licensing authority of any change to their details.

Photographs

The growing popularity of digital cameras means that many now use them to record a variety of activities – amateur radio activities included. Most of the photographs contributed to AR with articles and news items are now digital images.

Unfortunately, many are not suitable for publication. Others are very good in subject and composition, suitable for the cover of AR or the inside back cover, but are not useable for either of these purposes.

Why is this so?

Many people set the camera to record the maximum number of images and to save the image as low or medium quality jpg format files (or do not alter the default settings on the camera when they start using it). The result will be an image of only 200-300 kilobytes, even though the camera is often capable of much better.

Such images are fine to use inside AR,

continued on page 7

Michael Owen VK3KI

The WIA Office.

For most of this year we have been looking for a new office for the WIA.

Our current office is in Balaclava Road, North Caulfield, near Hawthorn Road. It has some real advantages. It is only a 20 minute drive from the Melbourne CBD, and is very close to a tram stop. And above all, it is cheap. Very cheap.

One of the usual concerns about premises in a membership organisation (indeed, in any service business) is that if you have premises that are too flash, everyone will accuse you of wasting the member's money (or charging fees that are too high because of the extravagant premises you occupy).

We do not have that problem with these offices. Even if you like carpet on the walls, and the rather genteel run down feeling of the building generally, there are other features that most people would be surprised are not there.

It no longer meets our needs.

It is small. Very small.

It is, well, OK, when there are only two people there. But it gets instantly crowded when there are more than two. Very crowded.

A number of people assist in the office, undertaking such tasks as sending out the Foundation Licence Manuals or the Call Books to either clubs or individuals. We often have meetings of different people there. So, often, we need more space.

Indeed, we have Publication Committee meetings there and, frankly it only "sort of" works. We get out a folding table and put it in one of the two clear floor spaces. It really is much better if a few Publication Committee members cannot come. When we had a Board meeting last March, we used other premises – it was just too crowded for a two day meeting, as we had learnt the hard way the year before.

Among the facilities it does not have is a sink, or even a tap. If you want a cup of tea or coffee, someone will fill the jug from the tap in the ladies loo.

During summer, it can be very hot – indeed too hot. In winter, it is the opposite. So we have two stand alone air conditioners that make the place bearable, in both winter and summer, and really are not all that noisy.

Quite apart from office facilities, we need storage space. We have to keep examination documents for some time. Indeed, we hold every paper since the new assessment system commenced in October 2005. And there are plenty of other business documents that we are also bound to keep.

But we also have stock. Like, every year, the Call Book. But we also have the Foundation Licence Manual. We also have old copies of the magazine, and other historical documents.

At present we rent storage space at Williamstown, on the other side of Melbourne. We keep a lot of things there. We store the Foundation Licence Manual in a room rented to us by a friendly Scout group.

We need to find a storage space for the unique QSL collection, put together for the WIA by the late Ken Matchett VK3TL.

Currently, the WIA bookshop is run out of two places – the WIA office for the financial aspects and with the books consigned to, stored at and dispatched from the home of our wonderful bookshop manager, Chris Flak VK2QV in Mount Riverview, NSW. Chris wants to retire at the end of this year, so it really would make sense to handle all aspects of the bookshop from one place – but again, we need the place to store them.

Apart from storage space, we have some other criteria. Hardly surprisingly, we have found that the further from Melbourne, the cheaper it gets. But we need to have somewhere that is reasonably accessible. Accessible not only for volunteers and members, but also for our staff.

So, we started looking at commercial developments, small offices with attached warehouse space. There are many of these being built around Melbourne.

We also needed some sort of parking space.

Initially we considered buying premises. We do have some reserves, thanks the wonderful bequest of the late Henry Andersson, and the fact that a number of the previous Divisions, when they wound up, transferred all or part of their assets to the WIA. It would obviously be better to own property, because then when you improve it, you keep the benefit, rather than giving a benefit to a landlord.

But the trouble with that was that we are using the interest from these reserves to, in effect, subsidise membership fees.

The Directors have discussed what we would ideally have. A place we would be proud to call the home of the WIA.

But, in the end, it all comes down to money. We think we will have to rent premises and very likely will move into premises that will be just adequate, much better than we have now, but a series of compromises on location, neighbourhood, and quality.

And even then, to get what we must have as a minimum, we will be paying more than we are paying now.

So, we are looking.

But one thing is certain.

We do have to move!

How we solve the problem will be a story for another day.

But also, what the WIA really needs is more income, and that means more members, more sales and more income generating activity.

But that is also a story for another day.

ar

WIA News

Amateurs operating improperly - ACMA acts

Many amateurs have expressed concern at the on-air behaviour of a small number of amateurs, and have expressed that concern to the WIA. The WIA has made representations to ACMA and participated in a face to face meeting with ACMA officers on 28th June 2008.

The WIA has stressed that certain on-air behaviour was unacceptable to the majority of amateurs, particularly as amateur radio sought to attract younger people.

ACMA has now advised the WIA that it has taken a number of regulatory actions against amateur licensees operating in breach of the amateur licensing conditions.

ACMA received information from a number of sources about the activities of a small number of amateur operators.

Investigations were conducted and ACMA took compliance enforcement action against one amateur licensee for operating his station contrary to the Radiocommunications Licence Conditions (Amateur Licence) Determination No. 1 of 1997, the Amateur LCD. Two other operators were cautioned in regard to their operating activities.

Gary Ryan, Acting Manager, Interference Management Section, ACMA, said that during discussions with the operators it became apparent that they lacked understanding of the possible consequences of their actions. "Generally, they did not appreciate that breaches of compliance with licence conditions and other legislative provisions may result with intervention by the ACMA in the form of warnings, fines, prosecution or administrative action such as suspension or cancellation of licences" said Mr Ryan.

The WIA hopes that the action taken by ACMA would be seen by all amateurs as a reminder of the importance of being aware of and complying with the Amateur LCD.

ACMA releases submissions on spectrum options for 400 MHz spectrum

In April this year, the ACMA released a discussion paper that sought comment from interested stakeholders for the development of future arrangements for spectrum in the range 403 – 520 MHz, otherwise known as the 400 MHz band. The ACMA received 73 submissions in response to the discussion paper. Details of the submissions can be found on the ACMA website.

The discussion paper in particular sought comment from the amateur community on its continued use of the segments 420 – 430 MHz and 440 – 450 MHz in the amateur 70 cm band. The WIA lodged a submission on behalf of all Australian amateurs. A copy of the submission can be found on the ACMA website as well as on the WIA website.

The review of the 400 MHz spectrum is driven by the increasing use of this valuable piece of spectrum by government, industry and recreational users.

ACMA has indicated that it proposes to form a Working Group to assist in developing the new spectrum arrangements for the 400 MHz band. The WIA has been invited to participate in the Working Group, representing recreational users.

World ARDF Championships in Korea

The 14th World ARDF championships were held from the 2-7 September in Gyeonggi Province in Korea under the auspices of the Korean Amateur Radio League.

WIA members Bryan Ackerly VK3YNG and Bruce Paterson VK3TJN were amongst 320 representatives from 31 countries competing in the program.

In the 80 metre competition in the M40 section, Bryan was placed sixth out of a field of 46 and Bruce was placed 23rd. As a team, they were 6th in their category.

In the 2 metre competition in the M40 section, Bruce was 15th and Bryan was 26th. As a team they were 8th in the category.

Two Letter Call Sign ballot conducted

The ballot for two letter callsigns was conducted on Friday morning, 5 September at the WIA's offices in North Caulfield.

There were 315 valid applications to participate received, and every application was successful in that each will be offered a two letter callsign. All but 67 of the applicants were successful in receiving either their first or second choice.

The ballot was conducted by WIA Director Peter Young VK3MV as Ballot Manager.

The ballot was conducted under the supervision of the WIA's independent auditor Evan Mudie. Also present was Andy Byrne, of ACMA.

Letters to each successful candidate were posted on Monday 8 September.

Applications for the two letter callsigns must be received by ACMA no later than 10 October 2008.

The WIA urges successful applicants accepting their allocated callsign to lodge their application with ACMA as soon as possible, because if they do, their new callsign is likely to be included in the 2009 issue of the WIA Call Book.

WIA Club Grant Scheme

On 28 July 2008 applications for grants under the WIA's Club Grant Scheme closed.

There were 15 applications for Grants received from clubs across Australia. The applications are currently being reviewed by the Grant Committee and the WIA Board expects their advice soon.

continued on page 7

The Sniffit - an over timer for 70 cm and 2 metres

Jim Tregellas VK5JST
endsodds@internode.on.net

This article outlines, in significant detail, how to build a timer that will ensure that you not time out your local repeater, whether on the 70 cm or 2 metre amateur bands.

One of the prime (and untested) prerequisites for successful amateur radio operation is the ability to talk the leg off an iron pot. Here in South Australia we have a number of aspirants for world title status, with the result that our two metre and 70 cm repeaters are regularly timed out. This little timer is a response to that pressing need, and gives the potential offender a number of very obvious visual prompts as to when to start closing his (or her) mouth.

Circuit Operation

During transmission, high RF currents produce a small magnetic leakage flux around the coaxial cable interconnecting transceiver and aerial.

A few turns of wire wound around this cable consequently produces an AC voltage which is then rectified by a half wave voltage doubler. In turn, the DC produced is applied to the input of an op amp (gain 48) to form a signal indicating presence or absence of RF energy to the microprocessor chip following.

The op amp non-inverting input is protected from excessive DC levels by a clamp diode connected to the 5 volt rail.

The input detector circuitry has a very short discharge time so that the disappearance of RF will be almost instantly indicated to the microprocessor. It is also very broadband in design. The original design idea was to capacitively couple the detector circuitry to the aerial cable by simply winding a few turns of pickup wire around it, but this was a disaster.

If enough circuit gain was provided to sense the cable leakage generated by a 1 watt VHF transceiver, then there was also enough gain to sense the RF being emitted by an ABC AM broadcast band transmitter some 6 km away. This caused the timer circuit to lock on permanently, and so the slightly less convenient pickup coil connected between detector input and ground evolved. This technique is very effective in getting the detector to just sense RF cable leakage, rather than 50 Hz AC hum, AM broadcast transmissions and any other spurious signal which happens to be floating around.

Anyway, once the transmit key is pressed, the output of the LM358 goes high (pin 1) starting the microprocessor timing routines and turning on a green LED. These routines are developed around a fundamental period of 100 milliseconds and when this basic time expires, a test is conducted to see whether RF is still present. If there is

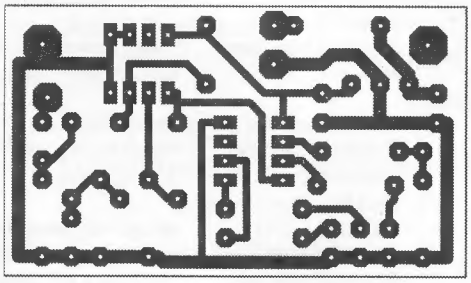

Figure 2: Circuit board.

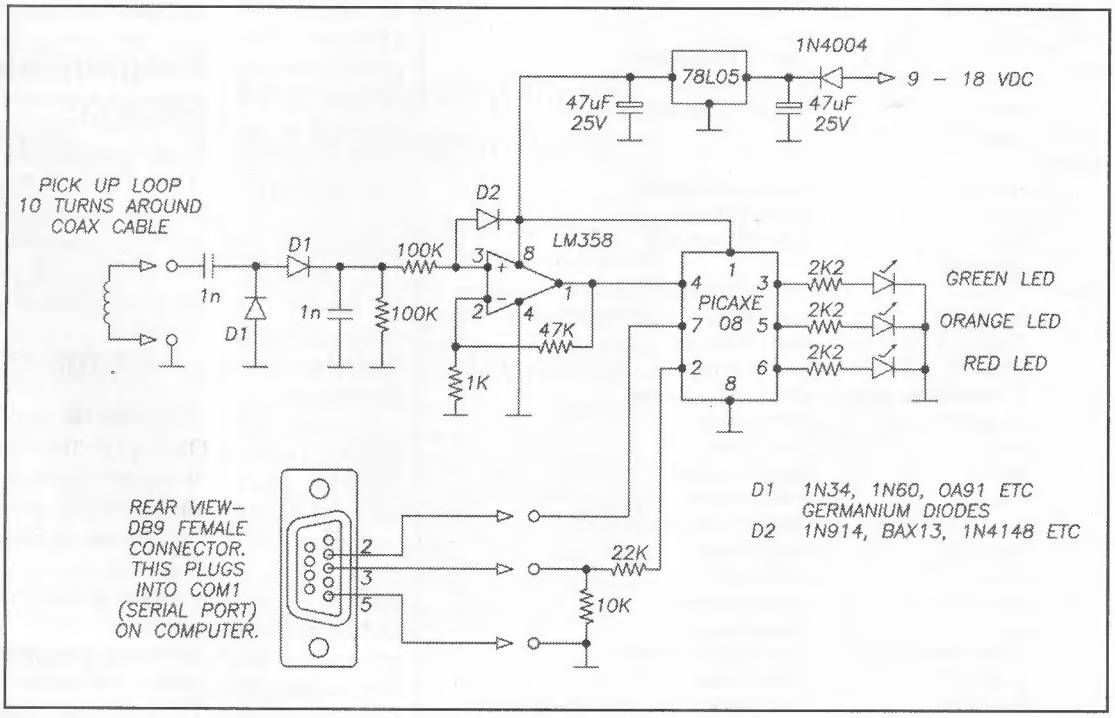

Figure 1: Circuit diagram..

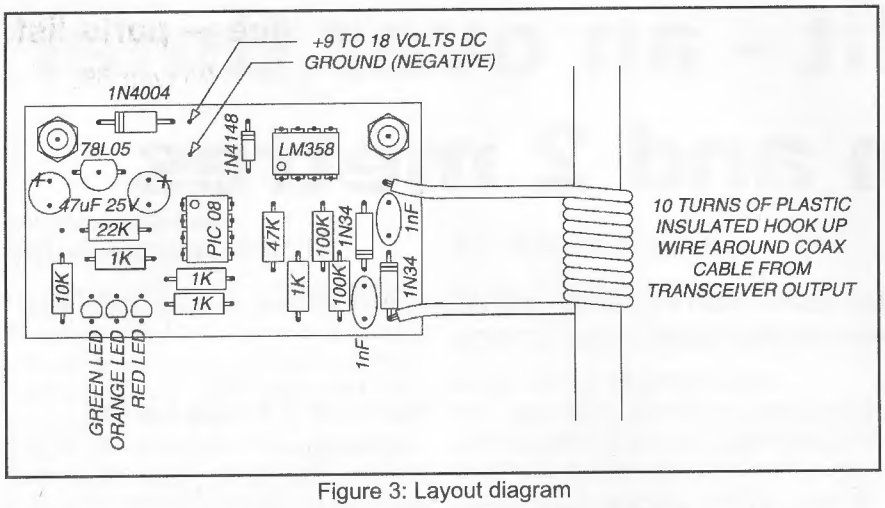

Figure 3: Layout diagram

Sniffit timer routine - VK5JST

```
        let dirs=%00010110      'define inputs and outputs
        pause 500               'let everything settle
start:
        low 1                   'turn all leds off
        low 4
        low 2
        b0=0                    'preset all variables to zero
        b1=0
        if pin3=0 then start    'check rf present
        high 4                  'turn on green led
time:
        for b0=0 to 9'set up 1 second delay loop
        if pin3=0 then start    'check rf still present
        pause 100               '100mS delay
        next b0
        b1=b1+1                 'set up 165 second counter loop
        if b1>165 then flash    'for times >165 secs, flash all leds
        if b1>160 then red      'for times >160 secs, turn on red led only
        if b1>150 then orange   'for times >150 secs, turn on orange only
        goto time
red:
                low 2           'turn off orange led
                high 1          'turn on red led
        low 4                   'turn off green led
        goto time
orange:
        high 2                  'turn on orange led
        low 1                   'turn off red led
        low 4                   'turn off green led
        goto time
flash:                          'routine flashes all leds until rf vanishes
        low 1                   'turn off red
        low 2                   'turn off orange
        high 4                  'turn on green
        if pin3=0 then start    'check rf still present
        pause 50                '50mS delay
        low 1                   'turn off red
        high 2                  'turn on orange
        low 4                   'turn on green
        if pin3=0 then start    'check rf still present
        pause 50                '50mS delay
        high 1                  'turn on red
        low 2                   'turn off orange
        low 4                   'turn off green
        if pin3=0 then start    'check rf still present
        pause 50                '50mS delay
        goto flash              'loop,flashing leds alternatively until rf
                                        disappears
```

no RF then the program returns to the start and continues endlessly testing until RF reappears. If RF is present then a number of logical tests are done.

For periods of less than 150 seconds, the green LED stays on. For periods between 150 and 160 seconds an amber LED appears. For periods between 160 and 165 seconds a red LED is turned on. Finally, for periods greater than 165 seconds, all LEDS are sequentially flashed until RF disappears.

If the RF disappears during any part of these sequences, everything is switched off and the program returns to the start, waiting for RF to reappear and recommence the timing sequence.

All of these periods (and the actual program operation too if you feel the need) can be simply adjusted by changing a few numbers and reloading the revised routine into the microprocessor EEPROM. This is very simple to do, and a lot of fun, and clearly demonstrates how user friendly the PICAXE processors are relative to other chips on the market. After you have done it the first time, the old grey matter will start bursting with all manner of devious schemes.

Construction

First, make the printed circuit board. There are a number of ways to do this, but my favourite technique (very cheap!) involves the use of clay surfaced paper, a laser printer or Xerox machine, and a steam iron.

The method can be found on my home page at http://www.users.on.net/~endsodds. Mount all components, starting with those of lowest profile. When you finish, double check the value and orientation of parts, particularly electrolytics, diodes and ICs. Add the DB9 female connector and three wires which allow the PICAXE to be programmed.

Those of you who have wrestled with other micro chips will definitely appreciate the amazingly simple interface of this device family.

Programming the PICAXE

Programming PICAXE chips is simple. As a first step, obtain the Picaxe Programming Editor, which is the software produced by Revolution Education of the UK, to allow programming of all PICAXE chips released.

The program goes by the real name of BAS805.EXE and can be downloaded free under the 'Software' tab on the front page of the Revolution Education site: http://www.rev-ed.co.uk/picaxe/ You will probably need an ADSL Internet connection as the file is some 33 Mb in length.

Once you have the file, use the Windows 'RUN' feature to install the editor on your desktop. Now open the editor and select either PICAXE 08 or PICAXE 08M depending on which chip you bought. You can use either but the

08M provides four times the program storage space.

Type the routine listed elsewhere in this article into the worksheet provided and save it if you wish with a name such as UPSHUT.BAS (the extension is necessary as it is a BASIC file). Plug in the programming cable to COM1 on your computer and apply power to the timer PCB.

Find 'PICAXE' on the program header and then click on 'RUN'. After a short delay, the control routine will be squirted into the PICAXE EEPROM. That is it! Your project should now be alive. If you have made any errors, correcting them is as simple as typing the changes into the routine and then clicking on 'RUN' again.

Testing

Temporarily solder a wire to the junction of the two germanium diodes D1, and connect the other end to the 5 volt rail (via a switch if you feel like it). Immediately you do this, the green LED should light.

You can now check out the accuracy of the timing. As the clock in the PICAXE is not crystal controlled, do not expect better than 5% accuracy. You can trim this tolerance out by changing the numbers in the decision tree within the routine.

Finally

When you have finished, unsolder the programming cable from the PCB and install the unit in a box. The unit will happily run from any DC voltage source between 9 and 18 volts and draws around 5 mA.

The most likely power source is the 13.8 volt supply for your VHF/UHF rig. The most convenient way of making the RF pickup coil is to solder two wires of around 150 mm in length to the PCB, one to the RF input and the other to ground. Strip the other end of these wires, and after winding them around the coaxial cable to make a continuous coil, join them centrally by twisting the stripped ends together.

Copyright August 2007

The software for this article should be available for download from the AR archive on the WIA website.

ar

Sniffit timer – parts list.

Resistors (all 0.25 watt 5%)

1 @ 1k	1 @ 22k
3 @ 2k2	1 @ 47k
1 @ 10k	2 @ 100k

Capacitors

2 @ 47 uF 25 VW aluminium electrolytics

2 @ 1000 pF 100 VW disc ceramics

Semiconductors

1 @ 78L05 1 @ LM358

1 @ Picaxe 08

1 @ 3 mm dia 5000 mcd red LED

1 @ 3 mm dia 5000 mcd orange LED

1 @ 3 mm dia 5000 mcd green LED

1 @ 1N914 or 1N4148

2 @ 8 pin DIL sockets

2 @ 1N34 or 1N60 or OA91 (or equivalent) germanium diodes

Miscellaneous

1 @ printed circuit board, hookup wire, solder.

Editorial continued from page 2

but we need higher resolution images for the cover.

If you think that your planned photograph may be cover material, think about checking the file size settings before pressing the shutter button. We need images of at least 1 MB, preferably larger. And look at the cost of memory cards now – the prices have fallen considerably.

You can always send in a smaller version – say around 200-500 kB. Let us know that the image is available at higher resolution. If we think it will be useful at higher resolution, we will be in touch regarding a higher resolution file.

Beware of contributing photos via some of the software tools that many seem to use: some email client software converts the photo to a much smaller file – any image less than 100 kB may make the email transfer quicker but is unlikely to be usable anywhere in the magazine!

73 Peter VK3KAI

ar

News continued from page 4

The Grant Committee this year consists of Don Wilschefski VK4BY, Deane Blackman VK3TX and Bob Fincher VK3BRF.

ITU Leadership Visits Asian Amateur Radio Exhibit

The ITU Telecom Asia conference was held in Bangkok, Thailand, in the first week of September.

An IARU booth promoting amateur radio was established by IARU Region 3 with assistance from the Radio Amateur Society of Thailand (RAST), the IARU Member-Society in that country.

ITU Secretary General Dr Hamadoun I Toure HB9EHT and Dr Eun-Ju Kim, Head of the ITU Regional Office for Asia and the Pacific, visited the IARU booth, staying and talking with hams and visitors for more than half an hour.

Region 3 Directors Meet

The IARU Region 3 Directors met in Tokyo over two and a half days from 20 to 22 August 2008, hosted by Japan Amateur Radio League (JARL).

The Directors are Chairman Michael Owen VK3KI, Shizuo Endo JE1MUI, Peter Lake ZL2AZ, Gopal Madhavan VU2GMN and Joong-Geun Rhee HL1AQQ. They were assisted by Secretary Keigo Komuro JA1KAB and Assistant Secretary Jay Oka JA1TRC. IARU Vice President Tim Ellam VE6SH also participated in the meeting.

The Directors reviewed the ITU World Radiocommunication Conference that had been held in Geneva in November 2007 (WRC-07). The next WRC will be held in 2011 (WRC-11) and has agenda items that may directly and indirectly affect the amateur services. The Directors recognised the importance of ensuring that those involved in the preparation for that Conference at a regional and national level are kept fully informed.

ar

NEScaf – an essential addition to any QRP shack

Grant McDuling VK4JAZ

Operating a QRP shack can be challenging at the best of times. This little device is as easy to make as a cup of instant coffee and it has a similar wake-up effect on your reception.

Trying to catch the attention of distant QRO operators is a task that can test the very best QRP operator to the limit. We accept this as part and parcel of the thrill of QRP. However life can be made very much more pleasant given perfect operating conditions such as frequencies clear of QRM and QRN as well as a co-operative Sun!

The world of QRP is definitely improving of late, and I have been able to add some wonderful contacts to my log. One down side has been the unstable weather patterns resulting in much static interference, making copying difficult and tiresome.

While talking to Ray VK4ZW recently on 2 m, he mentioned how impressive his Digital Signal Processor is on his main rig. I listened in awe as no QRP rig to my knowledge has anything like this. So I decided to do a search on the internet to see what I could discover.

I quickly came across the site of the New England QRP Club (http://newenglandqrp.org) and read with more than a little interest about an intriguing kit called the NEScaf that they produce.

This is a switched capacitive audio filter that plugs straight into the audio out socket of any QRP rig. A quick discussion with VK4ZW and an order for three of these little beauties was placed.

The NEScaf has two panel-mounted controls - a single centre-detent potentiometer that sets the centre frequency of the filter's bandpass and a dual-ganged potentiometer that provides a continuously variable bandwidth control from about 60 Hz to around 1500 Hz.

This kit uses all through-hole components, and the construction and adjustment is simple and easily tackled

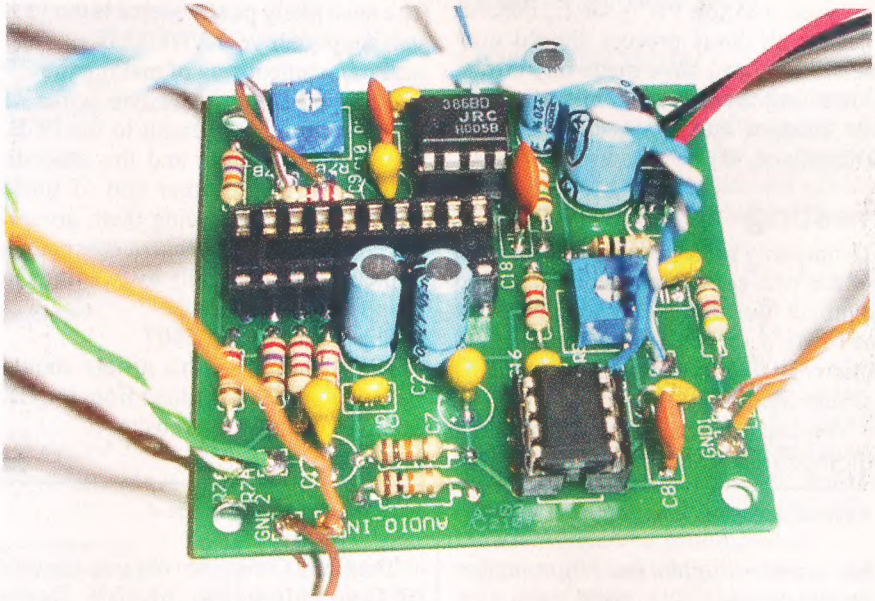

Photo 1: The circuit board with all components in place.

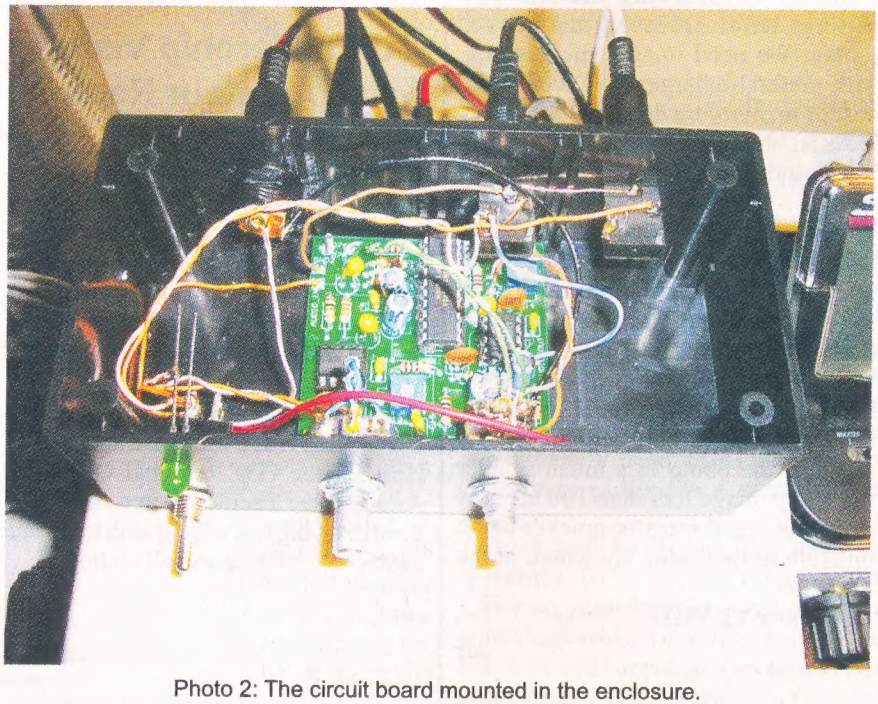

Photo 2: The circuit board mounted in the enclosure.

Photo 3: The completed NEScaf unit.

by the novice constructor. It all went together quickly and I was amazed that it worked first time.

For me that was a pleasant surprise because I always seem to hit snags with the kits I build.

The kit is built in stages and this I think makes it so easy to build and test as you go. The first stage is the power supply, which supplies 4.5 V and 9 V to the various stages, an audio amp (LM386), a clock generator and the SCAF IC chip (MF100).

There are two internally-mounted trimmer pots, one being used to calibrate the centre frequency pot and the other to adjust the audio level into the filter's output amp. Setting this to match the audio level of your rig means the NEScaf can be connected to your rig of choice but only switched on when needed without any noticeable change to the audio level. I find this a most useful feature.

So how does one operate the NEScaf?

Once the trimmer has been set up for the rig (to take into account the transmit offset), the filter can be used as a tuning aid. The frequency pot is left at the centre detent with the bandwidth set wide.

Then, as you come across a signal of interest, the bandwidth can be narrowed until the signal sounds best in the headphones or speaker. When you are right onto the station's frequency, the signal will peak.

Another useful function of the NEScaf, when using it with a fixed frequency QRP rig, is to be able to bring the incoming signal in when the responding station answers slightly off frequency. This allows you to adjust the receiver response without changing your operating frequency; a very powerful tool indeed.

I have found the continuously variable frequency and bandwidth controls to be very useful and enabled me to pull in weak signals that I simply could not hear at all with the filter turned off.

At a price of around $35, what more could any QRP operator desire?

ar

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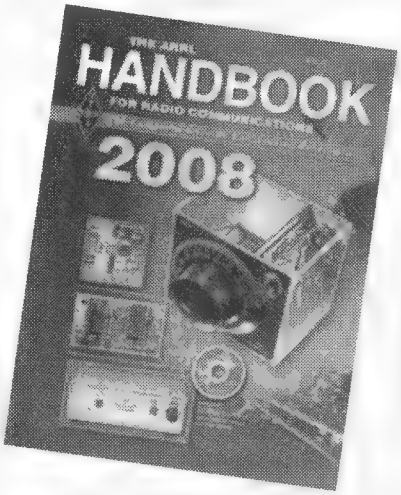

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An amplitude modulation monitor

Drew Diamond VK3XU

Amplitude modulation is enjoying renewed interest from various individuals and groups.

The usual method of assessing modulation depth (or percentage) is to observe the modulated signal on an oscilloscope, either as a trapezoid, or modulated envelope (Reference 1). Yet the average amateur may not own an oscilloscope, or, if s/he does have a 'scope, it may not have sufficient high-frequency bandwidth, being suitable only for displaying audio frequency signals.

Moreover, an oscilloscope display does not provide much 'qualitative' information about what the signal actually sounds like. Reports from other stations may be sufficient, but it is much better if the transmitted signal can be sampled 'off-air'. Hence, any problem, such as sudden loss of modulation, or an intermittent fault, or noise and/or hum, or distortion, will be immediately detected.

Offered here is a handy little modulation monitor that provides amplified 'crystal-set' reception of AM on 1.8 and 3.6 MHz up to a radius of about 300 m from the transmitter, and at reduced but quite adequate sensitivity on 7 MHz.

When used in the shack, an oscilloscope, of only modest bandwidth, may be connected to the monitor's output, allowing the detected audio waveform to be observed directly.

Circuit

One potential problem with crystal (diode) detectors is where, under low signal conditions, the turn-on 'knee' of the diode is a significant part of the operating curve of the diode, resulting in some distortion of the detected waveform. In this instance, the Schottky diode (a germanium will also serve, see Figure 1) has some forward bias - about 90 mV applied, thus greatly reducing distortion at low signal levels, and fortuitously, improving sensitivity. In all other respects the circuit is quite conventional.

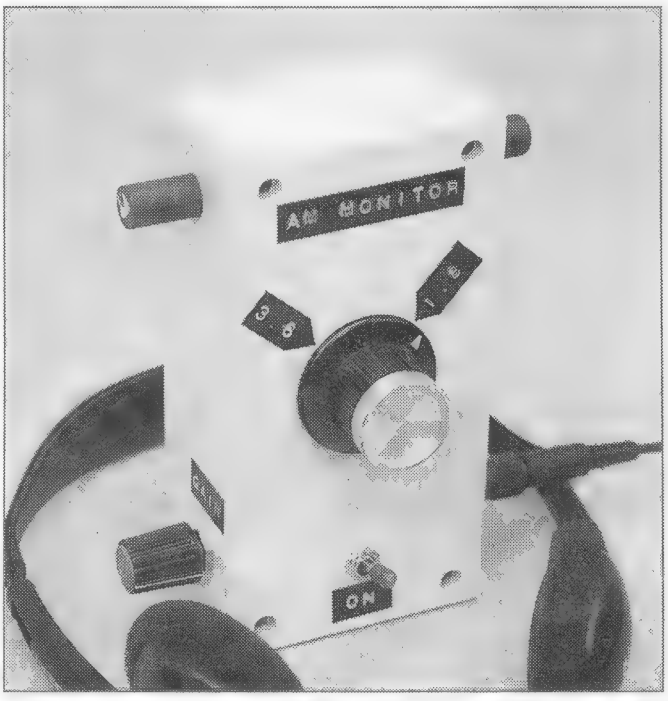

Photo 1: The amplitude modulation monitor.

Detected audio is applied to the input of a popular LM386 audio amplifier to power low or high impedance headphones. Or the signal may be cabled to the input of an oscilloscope whereupon the transmitted modulation may be observed.

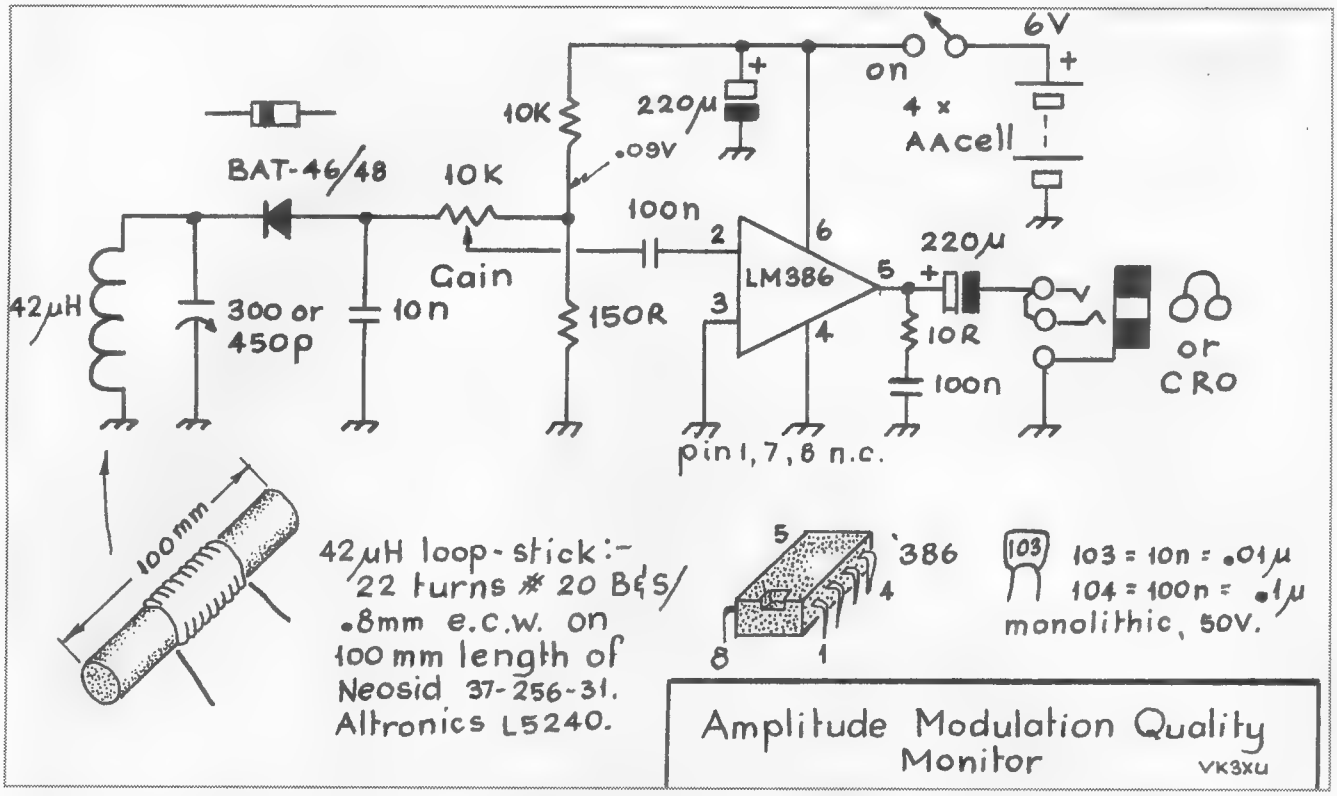

Figure 1: Circuit diagram of the amplitude modulation monitor.

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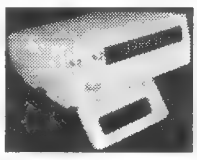

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Construction

The prototype model, shown in Photo 1, is housed in a plastic 'jiffy' box measuring 130 x 67 x 40 mm. The variable capacitor, amplifier chip and associated components are accommodated upon a 'paddyboard' circuit board (Reference 2) measuring 80 x 50 mm, although any preferred construction style, even 'ugly', should serve provided that component leads are reasonably short, and the general layout suggested in Figure 2 and Photo 2 is followed.

The LM386 chip may be fitted into an 8-pin DIL socket, that is in turn soldered upon a 'substrate' pad of circuit board, segmented as shown. The angled cuts are at 65 degrees to the centre line of the chip. The substrate and pads may be fixed, copper side up, upon the circuit board with just a dab of super glue.

Or, consider using hot-melt glue. In this case, put a sliver of solid glue upon the underside (fibre) of the pad, then apply your soldering iron tip to the glue and melt it evenly. Quickly place the pad on to the board in the exact spot required. A 'handle', such as a 1 W resistor may first be temporarily soldered to the pad as an aid to this procedure.

The antenna coil is wound upon a 100 mm length of Neosid 37-256-31 F14 ferrite rod. As sold, the rod is twice as long as needed. To halve the rod, grind a shallow groove around the circumference, then, with fingers and thumbs each side of the groove, snap it as you would break a stick.

Close-wind 22 turns of #20 B&S/0.8 mm ecw (winding length about 18 mm) on to the rod. The coil may be wound on, then removed, allowing the rod to be re-inserted into the coil as it is passed through suitably sized holes each side of the box, as pictured in Photo 2. A blob of hot-melt or epoxy glue should be applied to the join between the rod and the inner wall of the box.

The four AA cells for the 6 V battery supply may be accommodated in a 4-cell holder (eg Jaycar P/N PH 9200), attached with hot-melt glue to the lower rear of the jiffy box, as illustrated in Photo 3.

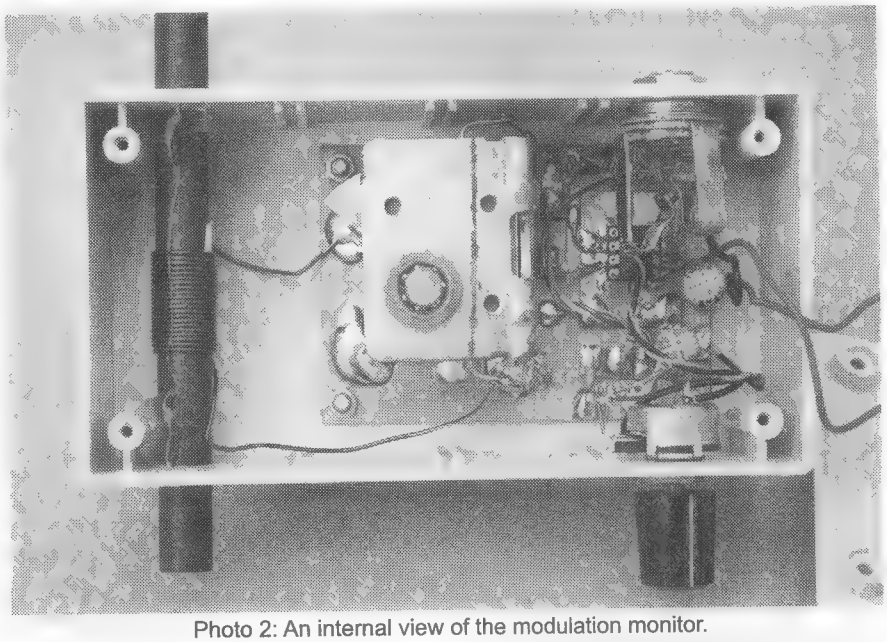

Photo 2: An internal view of the modulation monitor.

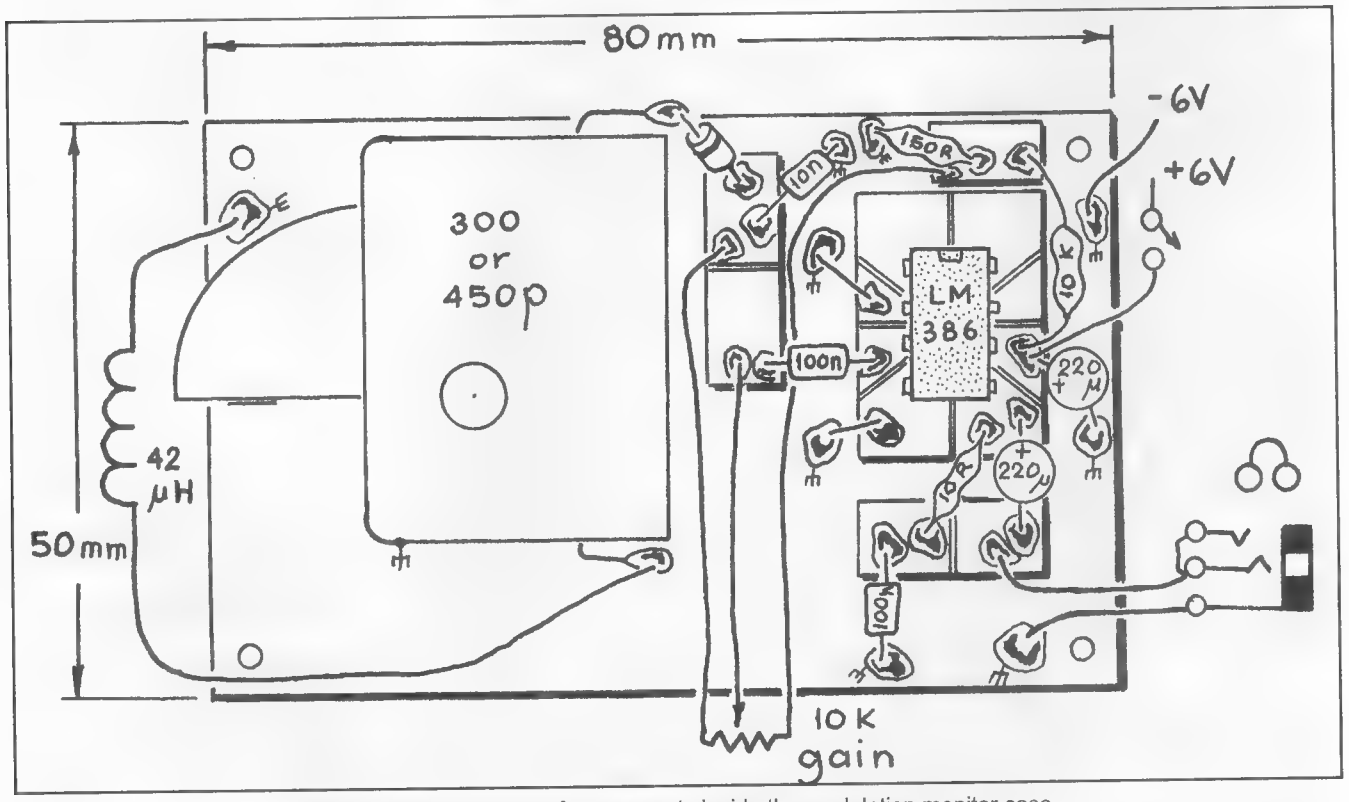

Figure 2: General layout of components inside the modulation monitor case.

Operation

Carefully inspect your soldering for quality and accuracy. Confirm that the diode, LM386, electrolytic capacitors and the 4 x AA cells are installed correctly.

Plug in headphones, and then turn the gain potentiometer to minimum. Upon switch-on you should only hear a soft 'plop'. For a simple preliminary test that the amplifier is working, hold the monitor near a powered mains transformer, where hum from leaked 50 Hz flux should be heard within about 300 mm of the source (in actual use the monitor must be adequately distanced from mains and modulation transformers).

Key the transmitter on-air and apply some modulation. Tune the signal in by peaking the variable capacitor and you should hear a close approximation of what your signal actually sounds like on a good, distant receiver.

One caution. There is an observed 'over-load effect' with such monitors, where (it is thought) mains harmonics from diode rectifiers in the shack environment impress an apparently larger amount of background hum or buzz on to the monitored signal than is actually the case. This can occur when the signal is very strong. The solution is to simply rotate the plane of the monitor's loop-stick antenna so that the signal is reduced to a more reasonable level, thus giving a truer representation of the signal as it is received at a distance.

To view the modulation waveform, cable the monitor's output to the vertical input of the 'scope, set at an appropriate sensitivity (say 100 mV/division initially). Being remarkably sinusoidal, a 'whistle' of about 1 kHz into the microphone is a handy signal source for testing the linearity of the entire transmit chain. Over-modulation is indicated by 'flat-topping' or 'flat-bottoming' on the observed waveform.

Parts

All of the ordinary electronic components are available from our usual electronics component suppliers, including Altronics, Electronic World, Jaycar, Rockby and Semtronics. The preferred Neosid ferrite rod is available from Altronics - P/N L 5240. My plastic 'jiffy' box is a Jaycar HB-6023 (confirm that your variable capacitor will fit, together with the other circuitry). A BAT46/48 diode may be obtained from Jaycar - P/N ZR-1141.

The variable capacitor may be a one or two gang broadcast type with a total capacity of 300 or 450 pF. The capacitor in the prototype (visible in Photo 2) is an MSP 95 + 205 pF transistor radio part, very commonly available at ham-fests and swap meets.

If you have genuine difficulty in locating an item or two, do please write (or 'phone on 03 9722 1620). I am not in the parts business, but usually have spares on-hand, or can suggest a source.

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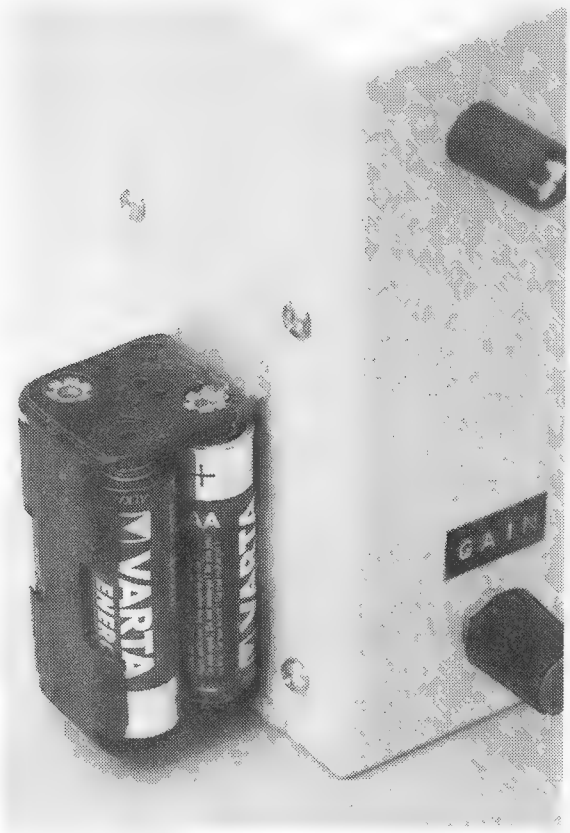

Photo 3: A suggested way to mount the battery.

Photos: Andrew Diamond

References and Further Reading

1. Test Equipment for the Radio Amateur; C Smith G4FZH, RSGB, Ch 11 (excellent).

2. "'Paddyboard' Circuit Construction - Revised"; Amateur Radio, May 2005.

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Now for something completely different Part 2:

A Class-D amplitude modulator for the 40 metre Class-E transmitter

Phil Wait VK2DKN

There are many ways to achieve amplitude modulation of a radio frequency carrier.

High-level plate-screen modulation was considered the "ant's pants" for many years, but acquiring a suitable modulation transformer was always difficult, especially for amateurs building medium-high power transmitters. Unless a DC shunt choke is used, modulation transformers must pass considerable unbalanced DC current to the final RF amplifier without core saturation, a factor which makes them large and expensive devices compared to common power transformers.

Efficiency modulation techniques such as screen grid or control grid modulation never seem to sound quite as good as high level modulation, and modern solid state rigs which use low level AM modulation techniques often sound "thin".

Excellent audio can be achieved with series modulation, where an active device (valve or solid state) is placed in series with the power supply to the final RF amplifier, as there is no modulation transformer to add distortion or limit the frequency response. However simple series modulators operate in Class-A and are very inefficient devices, dissipating large amounts of heat, and modulation techniques were developed to improve efficiency and lower the running costs of high power broadcast transmitters. The two most popular commercial high level modulation techniques are Class-H and Class-D modulation.

Class-H Modulation

A Class-H modulator actively varies (or switches) the power supply voltage up and down, so that at any time the series modulator device only just has the voltage that it needs to supply the RF amplifier, (i.e. it runs near saturation). Because the voltage across the series device is held to a minimum, efficiency is dramatically increased and heat dissipation minimized. Naturally the power supply voltage must be varied very quickly to be able to track the instantaneous voltage of the audio waveform. Simple Class-H modulators may just switch between two fixed power supply voltages.

A Class-H modulator is very suitable for use on a transmitter up to several hundred watts output, and would be very suitable for this transmitter, and perhaps simpler. However, the greatest efficiency can be obtained with a Class-D modulator, and in the spirit of presenting something different, that is the technique chosen for this design.

Again, this is not a project for the inexperienced constructor and many components in this design are not available from hobby electronics retail outlets. Hard to get components are available at outlets such as Farnell Electronics and RS Components, and Mouser Electronics in the US. A microphone pre-amplifier is not included in this circuit as many commercial microphone pre-amplifiers/mixers are available at low cost, (such as the Behringer 'Tube Ultragain MIC100' (yes- it has a 12AX7 in it!), the Eurorack range, or the simple KC-5166 preamplifier kit from Jaycar).

Class – D modulation

A Class-D modulator is very similar to a switching power supply where the output voltage is proportional to the duty cycle of a pulse width modulated (PWM) waveform. Instead of controlling the duty cycle of the pulse with a control voltage, in an audio amplifier/modulator the PWM duty cycle is controlled by an audio signal.

A Class-D modulator can produce broadcast quality audio when correctly designed, and the system is widely used in modern AM broadcast transmitters. Class-D amplifiers are also very commonly used for high power low cost audio amplifiers, like those "duff-duff" amplifiers in hot street cars.

The theory of Class-H and Class-D is very well covered in various websites, including Steve Cloutier's (WA1QIX) site at www.class-e.com. Many elements of this design are taken from information on that website.

The diagrams below show the basic generation of a PWM waveform.

See Figure 1. A comparator compares an audio signal to a triangle waveform, so that a pulse output is produced which varies in duty cycle in relation to the audio input voltage. As audio increases and decreases in voltage, the pulse output increases and decreases in time, (i.e. a pulse width modulated waveform). If the triangle waveform is many times the maximum audio frequency, the PWM output will faithfully track the instantaneous voltage of the audio signal.

As the series modulator device will now be switching a digital signal, it will be either switched hard on or hard off, achieving very high efficiency and low heat dissipation. However modulating an AM transmitter with a high frequency PWM square wave will produce multiple switching frequency sidebands (and not make you very popular), so the high frequency PWM switching signal must be removed by a low pass filter. After filtering, what is left is the average (integration) of the energy contained in the PWM waveform – the original audio signal.

Analysing the circuit

The block diagram (Figure 2) shows the functions of the Class-D modulator.

The low-side audio filter and PWM generator

This section is represented by the top four blocks in Figure 2 and the circuit diagram in Figure 3.

Line level (about 1 V p-p) audio, either balanced or unbalanced, is input via a 600 Ohm isolation transformer. The audio from the isolation transformer is fed via anti-aliasing network (R3/C3), to a LTC1063 5th-order Butterworth CMOS low-pass filter (IC1). An internal oscillator running at 50 times the desired cut-off frequency sets the filter bandwidth to about 4.5 kHz and the total transmitted bandwidth (both sidebands) to about 9 kHz.

Filtered audio then passes to an NE5534 op-amp (IC2), chosen for its capacity to drive low impedance loads. IC2 sets both the quiescent dc level (R22) into the input of the PWM modulator and also the overall audio gain (R23). The dc level sets the quiescent pulse-width output when no audio is present, and therefore the no-signal carrier power. The Modulation Level adjustment sets the input audio level required for full pulse width range (maximum modulation).

The UCC35701 pulse width modulator (IC3) has all the components necessary to generate the PWM signal. Also a sample of the power supply is fed back through R24 which is adjusted to cancel (null) any power supply hum. (Be careful not to use phase reversed variants of IC50 and IC52 as the hum-null feature will become a hum peak feature!). The UCC35701 also holds the internal triangle oscillator which is set by the value of C12 to about 125 kHz (not critical).

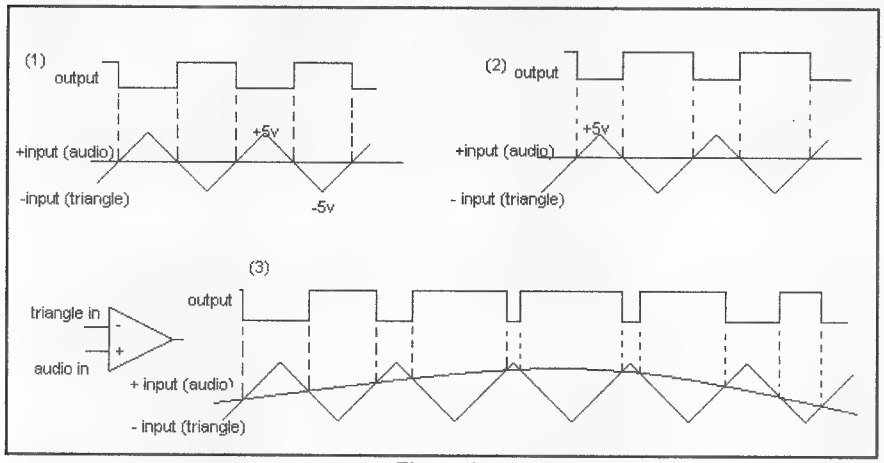

Figure 1.

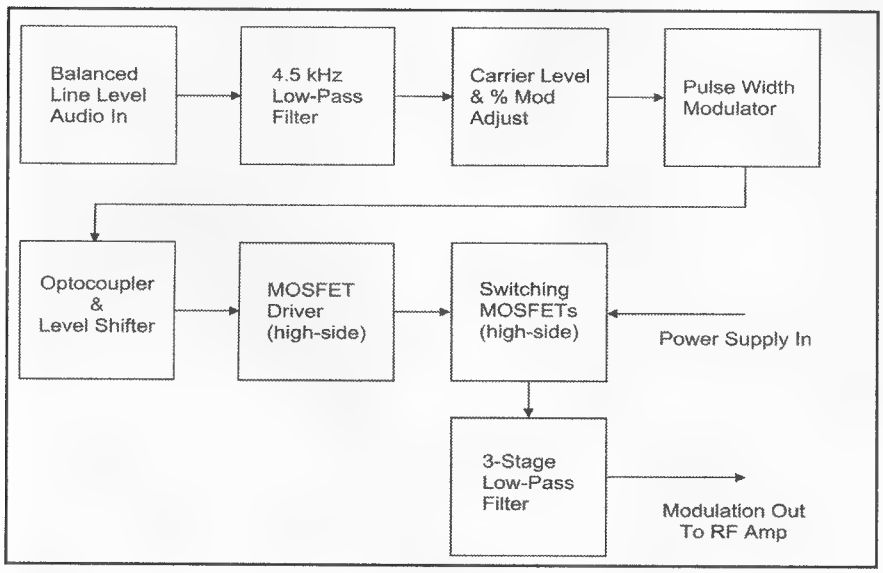

Figure 2.

The high-side MOSFET driver

This section is represented by the middle three blocks in Figure 2 and the circuit in Figure 4.

So far all the circuitry has operated from a 5 volt power supply referenced to chassis ground. As it is most convenient to place the series modulator device (MOSFETs) in the positive supply to the RF amplifier, the PWM signal will need to be level shifted and referenced to the source of the series MOSFETs. A 74OL6010 TTL to CMOS Buffer High-Speed Logic-To-Logic Output Optocoupler (IC50) provides the level shifting and voltage isolation required.

A UCC37322 MOSFET driver (IC52) provides the low impedance and high current drive required to overcome the large gate capacitance of the MOSFETs, achieving typical switching times of less than 50 ns. Longer switching times would lower efficiency and increase heat dissipation in the MOSFETs, and if very long the modulator may not achieve 100% modulation.

For simplicity, both the 74OL6010 and the UCC37322 are powered by an isolated 12 volt dc supply (IC53), which is referenced to the MOSFET source. The series MOSFETs (Q50 & Q51) are International Rectifier IRFP22N50 A 500 V 22 Amp HEXFETS designed primarily for switch mode power supplies/ high speed switching applications. These MOSFETs are selected simply because they are the same type as used in the transmitter, and other similar MOSFETs with a drain voltage above say 200 volts should be suitable.

The output filter

This section is represented by the final block in Figure 2 and the last part of Figure 4.

If the PWM signal was used to directly AM modulate a transmitter the switching frequency would appear as multiple sidebands separated from the carrier by multiples of the switching frequency. So if you were transmitting on 7.125 MHz and had a PWM switching frequency of 100 kHz, an output would be produced on 7.025 MHz and 7.225 MHz, and every 100 kHz up and down the spectrum. Clearly the PWM output must be filtered (integrated) to remove the switching frequency and leave only the original audio information.

The output filter network is a 15 kHz, 3-section Butterworth low-pass filter (L50-L52 & C64-C66) designed to operate into the transmitter's dc load resistance. The design and construction of this filter, especially the input inductor, is critical to the successful operation of the modulator. If the core of the input inductor (L50) cannot store sufficient energy (saturates), serious distortion will result. Also the permeability of the core material will decrease as flux density changes. Correct core selection is very important as the cores must be designed to handle the large peak modulation currents superimposed on a carrier level dc current.

The cores used are CWS/Bytemark Hi-Flux series CH777060, (AL = 60, 12.7 mm x 78.9 mm x 49.2 mm), available from Mouser Electronics and other US suppliers; they are large cores in order to ensure stability. Alternatively, smaller lower flux density cores such as the Neosid 17-745-24 (1006 material, AL = 120, 16.5 x 44 with 24 mm hole) can be stacked to increase core area and current handling, naturally the number of turns will need to be recalculated, (stacked Neosid cores gave good results on the first prototype – 4 cores for L50, 3 cores for L51, and 2 cores for L52). Winding details for single CH777060 cores are shown on the circuit diagram – use 12 gauge ECW or heavy gauge multi-strand insulated wire.

The output filter shown is calculated for a Butterworth response with a dc load resistance of 3.5 Ohms and a cut-off frequency of 15 kHz, but in practice it is not too critical. If you wish to use this circuit with a different transmitter, or simply experiment, you will need to re calculate the filter values to match the dc load resistance of your transmitter.

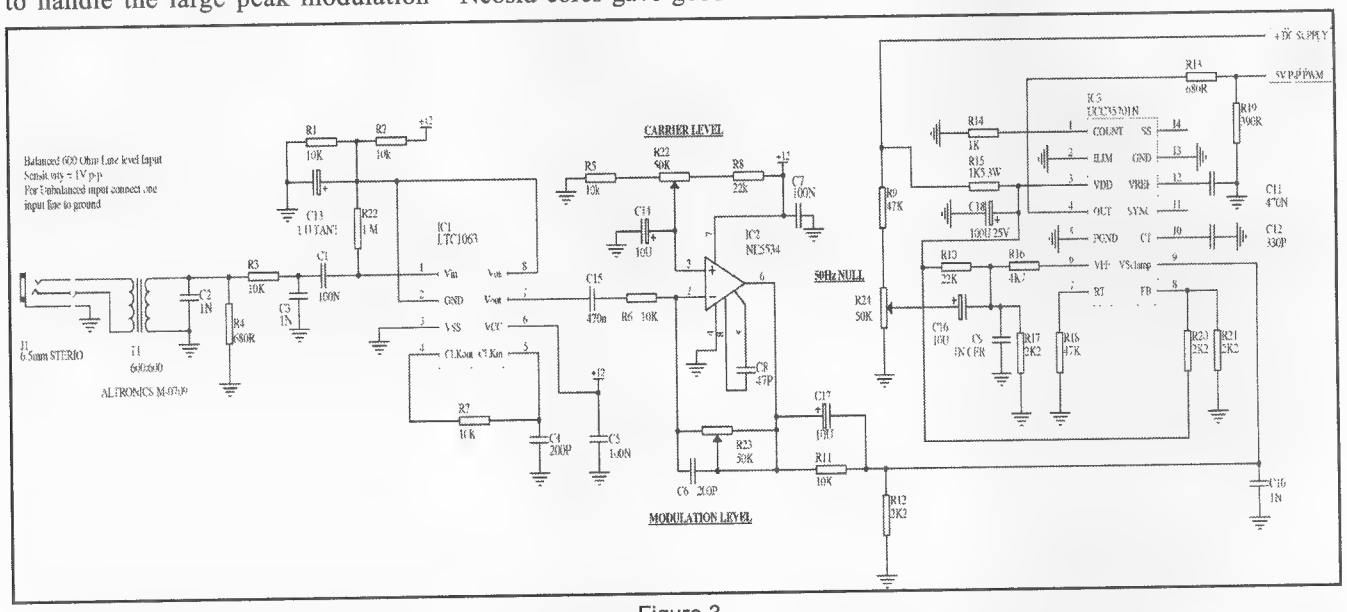

Figure 3

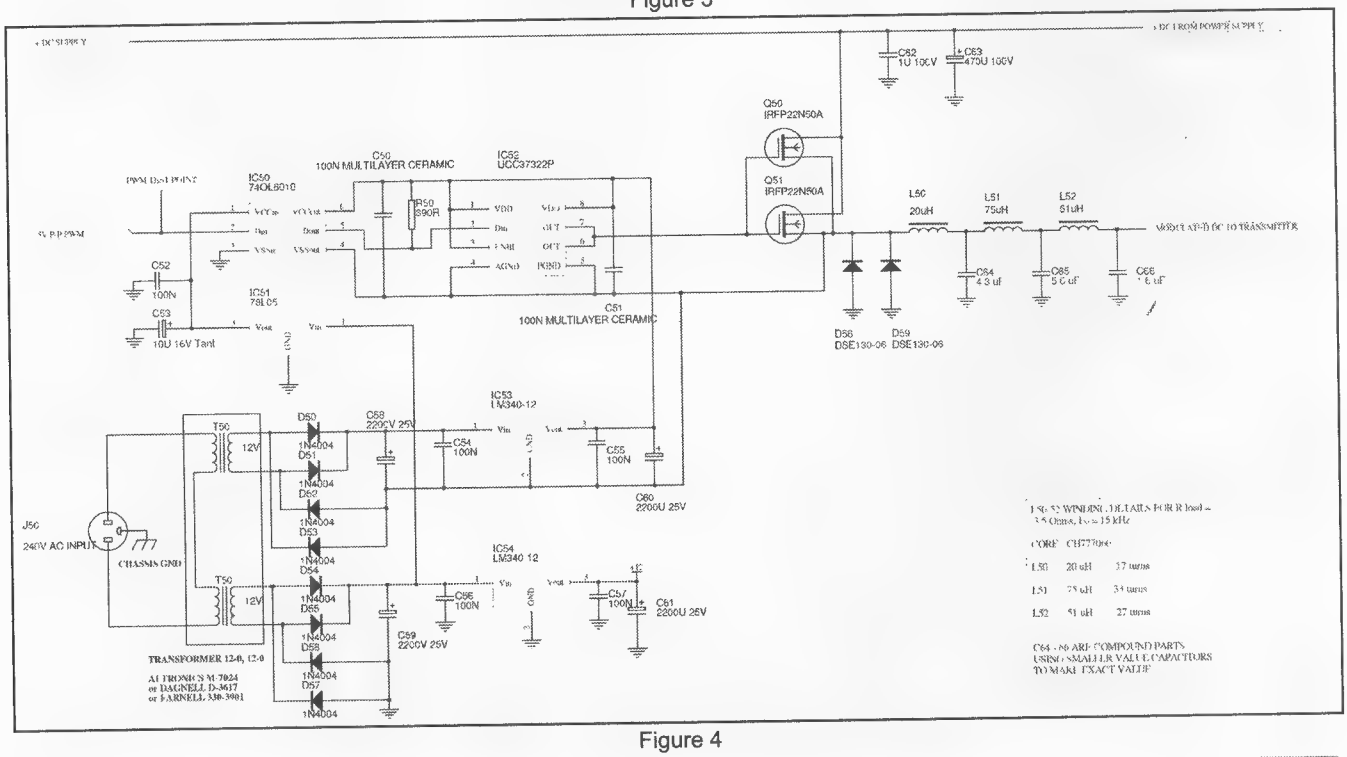

Figure 4

Photo 1: Internal construction of the modulator.

TET-EMTRON

Antenna Manufacturers

New Tet-Emtron Vertical Range

- All Aluminium with Stainless steel hardware.
- No adjustment needed to main antenna.
- Light.
- Free standing—no intrusive guy wires.
- 1 kW PEP power rating.
- Can be ground mounted or elevated.

The new TET-Emtron Vertical range is designed with ease of use in mind. Tuning is done by the radials when the antenna is in its final position (where possible).The radials can either lie on the ground, be buried or hang from the elevated antenna. The antenna comes with a set of radials that has a resonant radial for each band. Further sets can be ordered from TET-Emtron if desired.

See the web site for more info and a complete dealer list.

New

Tet-Emtron Vertical Range

TEV-4 TEV-3 TEV-3 Warc

40 Blackburn Street
STRATFORD
Victoria 3862 AUSTRALIA

Ph: 61 3 5145 6179
Fax: 61 3 5145 6821
ABN: 87404541761

www.tet-emtron.com
Email: rawmar@hotkey.net.au

Antenna	TEV-4	TEV-3	TEV-3 Warc
FREQUENCY	7, 14, 21, 28 MHz	14, 21, 28 MHz	10, 18, 24 MHz
ELEMENT HEIGHT	4090 mm	3800 mm	5025 mm
FEED IMPEDANCE	50 ohm	50 ohm	50 ohm
Max. RADIAL LENGTH	10.7 metres	5 metres	7.5 metres
SWR	1.5 or less	1.5 or less	1.5 or less
POWER RATING	1 kW	1 kW	1 kW

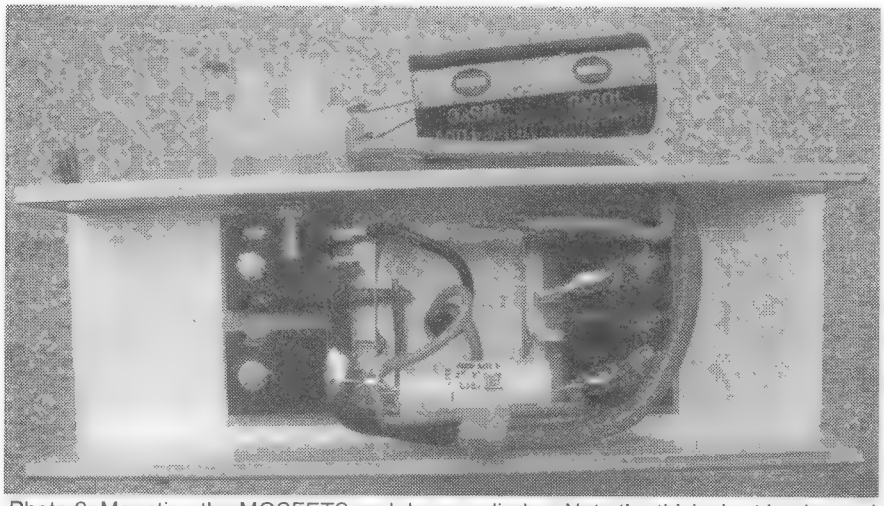

Photo 2: Mounting the MOSFETS and damper diodes. Note the thick short leads used even at audio frequencies to minimise switching times and avoid ringing.

To determine the load resistance, use a Variac to set the transmitter output power to about 25% of the maximum obtainable, tune for maximum efficiency (see transmitter article) and then calculate the load resistance from the power supply voltage and current. A convenient filter program, "SVC Filter Design" is available at www.tonnesoftware.com

The filter capacitors (C64-C66) are compound parts with the bulk capacitance provided by high current metallised polypropylene motor run capacitors. Use smaller value polypropylene capacitors in parallel to make the correct value.

The diodes D58 and D59 are damper diodes which clamp the flyback energy from the filter when the MOSFETs turn off, in the same way that a reverse diode absorbs the back EMF from a relay coil. The damper diodes must be very fast recovery types and about equal in power capacity to the MOSFETs, and must be located immediately next to the switching device, and connected with VERY short leads.

Construction

Refer to photo one: Internal construction of the modulator.

The chassis is identical to that of the transmitter and power supply described in the previous article.

All components except the MOSFETs, the damper diodes, and the output filter are assembled on a double sided pc board (with top side earth plane) designed to mount in a standard aluminium diecast box. Any construction which provides a high degree of RF shielding for the low level audio components would be suitable.

Switched mains power is connected from the transmitter power supply, through an IEC male chassis connector on the diecast box, to a pc board mounted transformer, (see photo 2).

The MOSFETs and the damper diodes are mounted on a length of U-channel which is mounted on an outside end face of the diecast box. Capacitors C62 and C63 are located near the MOSFETs. To preserve the switching rise-time and prevent ringing of the output waveform, keep all leads from the MOFETS to the driver (IC52) and the damper diodes (D58 & D59) very short.

The output filter cores are mounted between acrylic end plates bolted to the chassis with 12 mm aluminium angle. The number of turns for each inductor is shown on the circuit diagram and was determined using an inductance bridge and the published AL values of the CWS/ Bytemark Hi-Flux series CH777060 cores.

Motor run capacitors are used for the filter as they conveniently bolt to the chassis and can support smaller capacitors in parallel to make up the exact value. If you intend mounting the transmitter unit remote from the modulator, the inductance of the lead connecting the modulator to the transmitter will need to be taken into account as part of the output filter. In that case mount the output filter capacitor C66 in the transmitter chassis and reduce the inductance of L52 to compensate for the extra lead inductance.

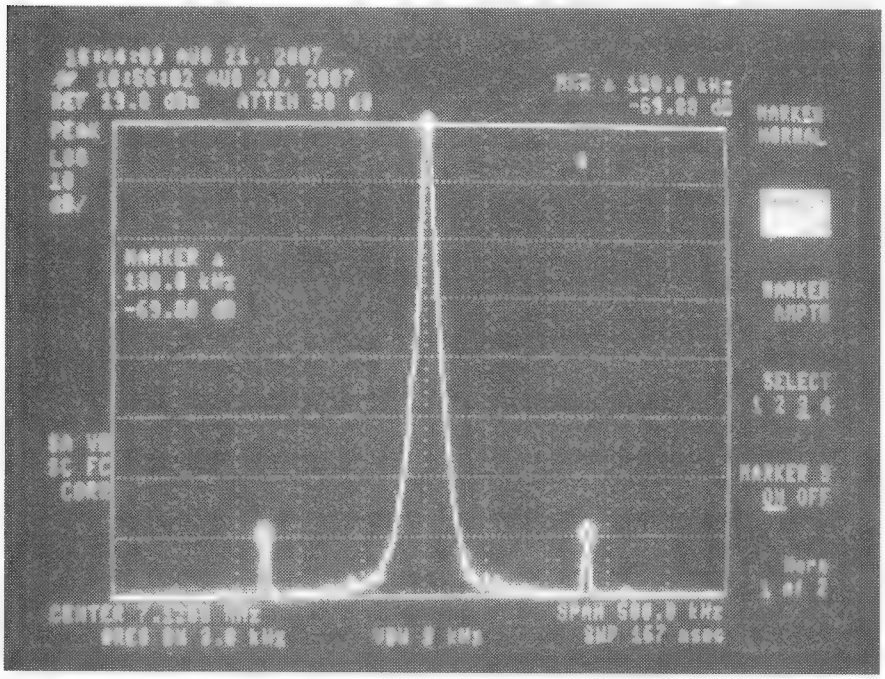

Photo 3: PWM switching frequency sidebands show as two signals equally spaced 130 kHz from the carrier, about 70 dB down. The vertical axis is 10 dB/div.

Turning on first time

Connect power to the modulator circuit but do not connect the main transmitter power supply to the modulator.

Set the carrier and modulation level adjustments to mid range.

Check all voltages using a multi-meter.

Connect an oscilloscope or frequency counter to the PWM output of the UCC35701 pulse width modulator (IC3). Observe a 5 V P-P pulsed output which varies in duty cycle as the carrier level

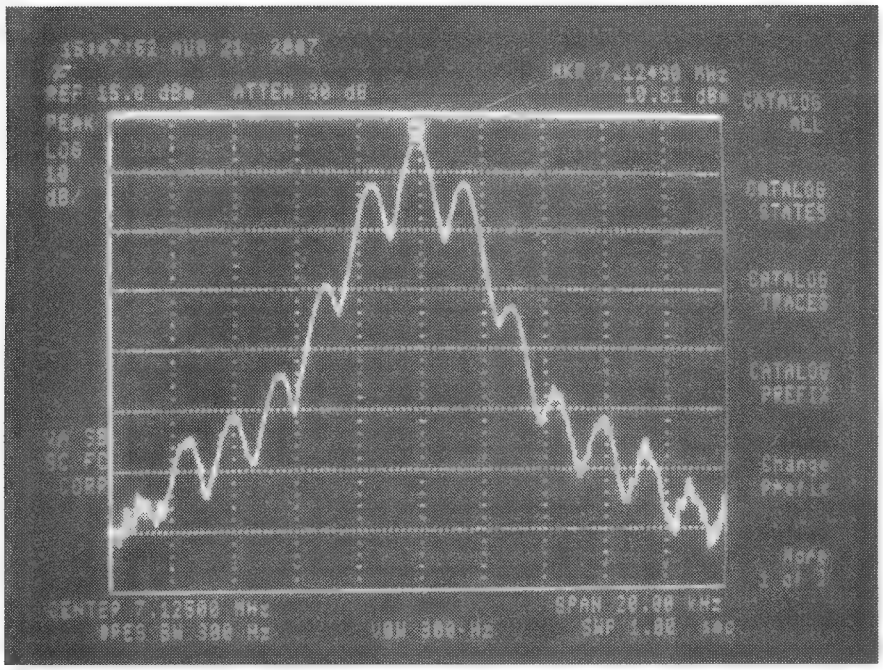

Photo 4: A 20 kHz frequency span showing the carrier and audio sidebands with a single 1.5 kHz tone and 80% modulation. Audio harmonic distortion can be seen as successive peaks to the right and left of the two inner sidebands. 2nd harmonic is about -20 dB and 3rd harmonic is about -35 dB.

adjustment is rotated. Check the PWM frequency is about 130 kHz (not critical - change the value of C12 if necessary).

Connect an audio source to the audio input and set the level to 1 V p-p. You should see the PWM waveform (as shown in the oscilloscope screen shot) vary in duty cycle as the audio input voltage is varied. Adjust the modulation level adjustment (R23) so a 1 V p-p input signal just achieves the maximum obtainable pulse width variation.

Make a resistive dummy load approximately equal to the design impedance of the output low-pass filter, in this case about 3.5 ohms, and capable of dissipating at least 100 watts. Connect the dummy load from the modulator output to ground, (i.e. after the low-pass filter where the transmitter would normally go). Connect the oscilloscope across the dummy load.

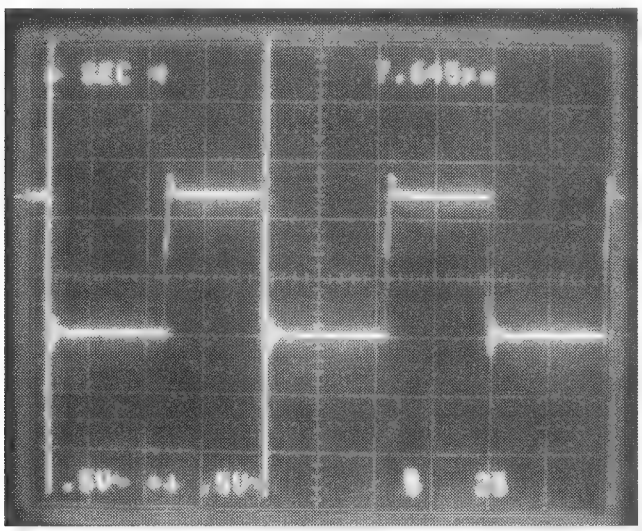

Photo 5: The drive signal to MOSFETs, measured differentially between gate and source, (with x10 probes). The two vertical lines measure the time of a single pulse cycle to 7.6 us or a pulse frequency of about 130 kHz. Voltage is 12 V p-p. No-input duty cycle set to about 40% - will vary with audio input.

Connect the transmitter power supply to the modulator, preferably using a mains Variac to slowly increase the voltage. You should see a clean audio waveform across the dummy load superimposed on a steady dc level. The audio waveform should reproduce the audio input, and the no-audio-signal dc level should vary with the setting of the carrier level adjustment (R22).

The carrier power level is determined by the quiescent (no audio signal) dc output voltage of the modulator. Set the carrier level adjustment (R22) to give a dc output voltage from the modulator of about 40% of the power supply voltage. You will need to repeat this adjustment several times as the power supply voltage will vary with load.

When sure all is well, connect the transmitter in place of the dummy load, connect the microphone and pre-amp, and check your off-air signal with the oscilloscope. Monitoring the off-air RF signal with an oscilloscope will allow you to set the modulation level for a clean output waveform without clipping.

There is one more thing to do - the human voice is not symmetrical and positive pressure peaks have a greater intensity than negative pressure peaks. Correct audio phase is necessary to achieve the maximum peak power output, or the loudest received signal. Many good microphone pre-amplifiers have a phase reversal switch, used in studio applications to avoid phase distortion when wearing headphones (phase cancellation between body conducted sound and sound in the ears from headphones - listening to yourself speak through headphones is never a good test of sound quality without a phase reversal switch). Change the phase of the balanced audio input (or operate the phase switch if your microphone pre-amp has one) to give the highest peak RF output signal observed on an oscilloscope or a peak reading watt meter.

Performance

This modulator has been in operation for many months without any problems and has received glowing on-air audio quality reports. It runs extremely cool and is very efficient. The 3 dB frequency response is about 50 Hz – 4 kHz (15 kHz without the input audio filter), maximum obtainable modulation is over 100% with slight negative peak clipping. The screen shots from an HP8591E spectrum analyser show PWM switching frequency spurs are attenuated by about 70 dB, and transmitted audio harmonic distortion is acceptably low (photos 3, 4 and 5).

All things considered a very good performer well worth the effort. See you on AM.

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Book review

Radio Projects for the Amateur Volume 4

by Drew Diamond

Review by Evan Jarman VK3ANI

Book: Quarto size, 124 pages
ISBN 978-0-9578689-2-2

Amateur Radio readers will be familiar with the work of Drew Diamond. His projects have shown a consistent quality that has earned many technical awards. The author has shown that you can still build reasonably sophisticated equipment using simple techniques. Now he has combined some of his more recent projects together in one book, his fourth collection of radio projects.

This book is a compendium of separate, stand alone, articles, the majority of which have appeared in past copies of *Amateur Radio*.

All the equipment described is beautifully built and a credit to the author.

The projects are within the capability of anyone with soldering ability but a multimeter and oscilloscope would be required test equipment. It is equipment for the experimenter, not the beginner. Some of the projects could occupy a weekend while others do require a great deal of time and care.

Receivers and transmitters account for nearly half the book. The equipment covers bands and modes that the mainstream commercial equipment operators do not, medium frequency and high frequency. CW and some AM are the transmitter modulation methods chosen as they are simple to design and construct.

The test equipment described is specialised, but is radio specific. It includes items like a tetrode tester, a leakage detector for capacitors and diodes, a crystal frequency reference, a dummy load and an SWR/power meter.

The workshop section concentrates on handy hints, rather than as an instruction book, in building techniques. Construction techniques are simple and occasionally ingenious. The articles on using transformers from old microwave ovens and adding extra windings to toroidal transformers show how redundant equipment can be reused as a source of unobtainable parts.

The 'paddyboard' is used extensively as the construction technique of choice to bypass the printed circuit board. This style of construction is ideal for experimenters as it caters for a far easier rearrangement of components than printed circuits. There is an explanatory article on this construction method for those not familiar with it. The ideas described show that a professional result can be achieved with simple homemade jigs.

Some component construction techniques are also covered. RF transmitting coil construction provides most of the material in the section on antennas. In fact, there are only two antennas described in the entire book and they are used for noise reduction.

This book concentrates on projects for use inside the radio shack. Apart from two projects (both of which carry warnings), the most dangerous part of construction is wiring the primary side of a mains transformer.

This book is for those who enjoy constructing equipment. All of the equipment described is beautifully built and a testimony to what can be achieved in the home workshop with simple equipment and care. I find it is quite valuable as a source of construction and design ideas that can be adapted.

Complete design information is provided, right down to the pin layouts for transistors, FETs, and most integrated circuits.

Having built some of the equipment described, I found that they have all met specifications claimed; some having (more than) a bit in reserve. Building some of the author's projects and then using them (which I still do) has, for me, put a lot of fun back into amateur radio.

The review copy was provided by the author. Copies of the book are available from a number of sources, including the WIA Bookshop. Retail price is between $20 and $25.

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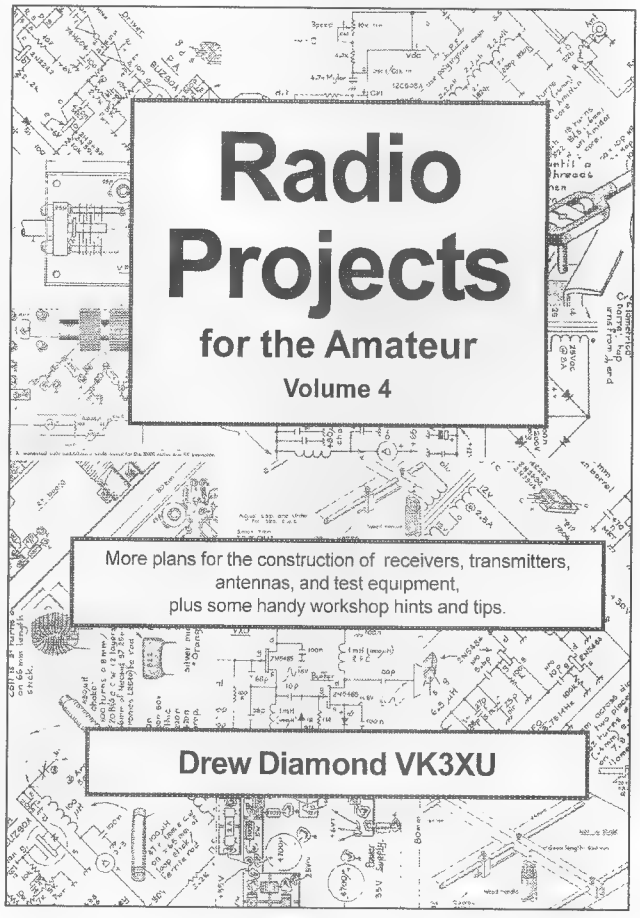
Radio
Projects
for the Amateur
Volume 4
More plans for the construction of receivers, transmitters, antennas, and test equipment, plus some handy workshop hints and tips.
Drew Diamond VK3XU

All about the ILLW

The idea of a lighthouse and lightship weekend of radio contacts originated in 1994 at Ayr in Scotland with Mike Dalrymple (GM4SUC) and other members of Ayr Amateur Radio Group.

Initially designed for Scotland as the Scottish Northern Lighthouses Award weekend it soon became international.

The group is committed to the longterm ownership, development, administration and non-commercial operation of the event on behalf of the world-wide radio amateur community. At the last weekend, 50 countries and 406 sites were active, (Australia with 50 lights 'radio active' was the most represented country)

How it works

Groups of amateurs set up portable stations at or in lighthouses on the 3rd full weekend in August. They then establish contact with other such lighthouse stations around the world. This is not a contest, but a fellowship and awareness weekend, designed to raise knowledge of both amateur radio and lighthouses; both great communicators of the twentieth century.

Starting at 0001 UTC on Saturday and finishing at 2359 UTC on Sunday, the event now coincides with the International Lighthouse Day organised by the International Association of Lighthouse Keepers, with many lighthouses open to the public on the day.

Many visitors show interest in both the lights and the radio. Each station's operators decide how they will operate their station regards modes and bands. Participants need not be on the air during the entire period. There are no restrictions on aerials or power.

As most available space in many lighthouses is usually filled to capacity, the activity does not have to take place inside the tower itself. Field-day type set-ups at the light or other buildings next to the light is OK with appropriate permission to operate there.

NEXT YEAR 15-16 AUGUST 2009

There are about 350 Lighthouses in Australia, Let's try for 100 'on the air' next year.

Kevin VK2CE maintains the ILLW website, http://illw.net and wrote an article about the weekend in July 2008 *Amateur Radio*.

SERG International Lighthouse Weekend

Charles Prime VK5XCP

On Saturday morning a number of South East Radio Group (SERG) members set out from their homes in Mount Gambier and Millicent on the journey to Kingston to meet up with Tony VK5ZAI at the Cape Jaffa Lighthouse.

Cape Jaffa lighthouse was originally located approximately eight kilometres out to sea from Cape Jaffa but since had been relocated to the foreshore in Kingston and is now under the care of the National Trust. Tony's QTH is in Kingston and he has a good relationship with the local members of the National Trust resulting in the radio club being able to set-up the operating station inside the original lighthouse building.

Established in 1872 on Margaret Brock Reef, the Cape Jaffa Lighthouse was built to protect ships from the treacherous currents that had seen the demise of many ships in the area. The original multi-wick oil burner was replaced by a pressurised kerosene burner in 1909. When turned off in 1973 it was believed to have been the last of its type to operate in Australia.

This type of lighthouse is known as 'Wells Screw Pile', chosen for this location as the narrow wrought iron piles allowed the heavy seas that break across the reef to pass harmlessly through. All the parts were manufactured and pre-assembled in England then dismantled and shipped to Australia.

Extreme difficulties were encountered during its construction which took three years instead of the proposed one year. Apparently when the site was first chosen the sea and weather was unusually calm but by construction time the sea was wild and the weather rough. Early construction was washed away and sometimes the contractors could not go out for days.

On 1 April 1973, a low powered temporary beacon was attached to the tower. The then Department of Transport had decided to dismantle the lighthouse and replace it with a beacon on the platform. The National Trust of South Australia (Kingston Branch) successfully lobbied for the lighthouse to be re-erected at Kingston where it could be preserved as a museum to show what life was like on the platform.

Dismantling began in February 1974 and was complete by March 1975. The reconstruction began at Kingston in June 1975 and was completed in December 1976. The Lighthouse was officially handed over to the National Trust of South Australia (Kingston Branch) in January 1976 and is now a museum.

Photo 1. The SERG 2008 ILW participants.

International Lighthouse/ Lightship Weekend

Tony did some set-up work on the Friday, so some antennas were already strung up on the available halyards. When the travelling group arrived they quickly unpacked the cars and moved the operating gear and supplies into the lighthouse. After a quick tour, the initial set-up was changed so that the open wire feeder for the dipole could be brought into the operating room without sharp bends around metal objects.

We were able to install two operating stations and had enough space and equipment for a third if required. The club's Kenwood TS-2000 was connected to an MFJ Tuner and the open wire feeder to an 80 metre dipole. The TS-2000 worked contacts primarily on 20 metres.

The second station used an Icom IC-7400 connected to a Diamond trapped dipole for 80 and 40 metres. Initially the Icom was operated on 40 metres. The lighthouse has two halyards (see photo) allowing the two antennas to be raised up either side of the lighthouse.

During the day we had visits from other SERG club members as well as friends from our neighbouring Naracoorte club. A local journalist, Helene, popped in to see us while we were operating and asked many questions about the lighthouse and the reasons for operating from there. Helene took some photos of us hard at work. The lighthouse was also open to the public on the Saturday with some local volunteers as guides, so the visitors got a tour of the lighthouse and as a bonus, got to watch us operate.

Tony and his XYL Jill really looked after us. While we were operating Jill brought over hot homemade soup and some great sandwich fixings. We had been under instructions to bring some sliced ham as a contribution, so there was an abundance of food. Having soup, sandwiches and coffee brought to you while calling CQ is a wonderful thing.

The SERG group pictured on the Cape Jaffa Lighthouse, now relocated to a park at Kingston after its removal from the nearby Margaret Brock reef.

The first contact on 20 metres was to a ZL lighthouse, so indications were good that we would be working some DX as well as local stations, many on lighthouses. Forty metres also showed signs of life with many good signals.

There was a little interference between stations but it was manageable and there was a good friendly amateur spirit evident. A station calling from Chile was heard but we could not get back to them, although there were plenty of VK stations that did.

It was getting late in the afternoon and those that were staying the night in Kingston were invited to stay at Tony's home and have a barbecue tea. The RD contest was discussed and Tony offered to let the club operate from his home, and as lighthouse operation on such a cold night was not attractive, the offer was too good to refuse. After a barbecue tea a number of us operated in the RD contest from Tony's home station, eventually retiring for the night at various sleeping locations around the QTH.

After a good night's sleep and a nice breakfast under our belts, thanks again to Tony and Jill, we were off to spend Sunday morning at the lighthouse. We were to continue with the RD contest as well as making some additional lighthouse contacts if we could. The bands were busy with RD stations and we were fortunate enough to make contacts with some more lighthouse stations as well as adding to our RD score.

Just before noon we packed up from the lighthouse and went back to Tony and Jill's house for some lunch. After lunch it was decided to go to the repeater site at Mount Benson for a quick look as the repeater was having some problems on receive.

Well, a quick look sometimes turns in to a long look. We found the problem and Tony decided he would fix the antenna the next day. The SERG club members from Mount Gambier now were on the way home. We got back to Mount Gambier after dark, exhausted after such a fun filled weekend.

Amateurs attending for some or all of the weekend included Andrew VK5KET, Tony VK5ZAI, Jill VK5ZAI (second op), Bill VK5WCC, Phil VK5PCL, Ross VK3KBO, Trevor VK5NC, David VK5ZOO, John VK5DJ, Linley VK5FRED, Charles VK5XCP and Col VK5DK

On behalf of SERG I would like to thank Tony and Jill for their hospitality for the weekend and look forward to next year when the international lighthouse weekend comes around again.

Photos thanks to 'The Coastal Leader'.

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International Lighthouse/ Lightship Weekend

VK3WI: Williamstown

Terry Murphy VK3UP

Wintry weather did not dampen the enthusiasm of those who took part in the lighthouse activation at Williamstown in Melbourne's inner southwest.

For the 4th year Amateur Radio Victoria set up VK3WI/portable at the Williamstown Lighthouse and Timeball Tower AU0036.

Despite depressed propagation almost 300 contacts were entered in the log including DX in Canada, Chile, Israel, New Zealand and Russia, plus 30 other lighthouses.

A highlight is the 40 m contact with 3G1F, the Arica, Chile lighthouse CL0010 activated by the Atacam Desert DX Group operators.

That may well be the longest distance lighthouse to lighthouse contact of the entire weekend on the 40 m band.

While primarily aimed at the lighthouse weekend activity, VK3WI also readily exchanged sequence numbers for the Remembrance Day Contest.

The station was put to air over the two days by about ten operators including five Foundation licensees who enjoyed the experience of operating a portable station.

The main station was a Kenwood TS-440SAT on 80 m, 40 m and 20 m feeding either an inverted vee attached near the top of the lighthouse or a refurbished Werner Wulf multiband trapped vertical that performed excellently. While 70 cm and 2 m was set-up, it achieved only minimal contacts.

There were members of the public who stopped by, with special visitors being Peter Vaughan and his wife Rhonda, descendants of the tower's last time-keeper Richard T. Vaughan who died aged 76 in 1926.

The time-keepers job was to haul a metal sphere to the top of the tower and let it drop at precisely 1 pm so ships anchored nearby could accurately set their chronometers.

Among the others popping in to see what was happening were two adults and a teenage boy who expressed interest in learning more about amateur radio with the view of possibly taking out the Foundation Licence.

Congratulations to the Ayr Amateur Radio Group and its webmaster Kevin Mulchay VK2CE for a record setting International Lighthouse and Lightship Weekend 2008.

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Michele VK3FEAT working ZL with Peter VK3QF logging.

Jim VK3PC working a station in Prince George, Canada on 40 metres.

VK7EM at Mersey Bluff

With Devonport City Council's permission to camp at The Mersey Bluff and their key to the reserve, I arrived at 9.00 am on Saturday 16th August and set up my station. I erected a multi-dipole inverted vee antenna for 80, 40 and 20 metres, with five car batteries connected in parallel to power an FT-757 and a 2 metre rig. I parked near the mast.

All was going well, but just then Murphy appeared. Having checked my antenna and cables many times, an SWR check revealed a reading of over 3 to 1. After a hasty check with a dummy load, I found that a SO239 socket on my SWR meter needed tightening. Once corrected, 80 and 40 metres were near 1:1 but 20 metres was still poor. Removal of the 20 metre loaded whip from my vehicle cured that – interactions were occurring between the 20 metre antennas.

I started operation at around 11.00 am. The next few hours were most enjoyable as I contacted lighthouse stations across the country and New Zealand: Cape Naturaliste in WA, Cooktown in the north and many others along the east coast of Australia, all with interesting tales. Like the difficult four hour trip across Fraser Island to Sandy Cape, the storm that flattened ZL2SEA's antenna and dumped a covering of hailstones on Puniho on Cape Egmont.

I kept in frequent contact with Wayne VK7FWAY and Eric VK7FEJE at Table Cape lighthouse and Bill VK7MX and Duncan VK7FLAK at Low Head. Bryan VK7KBE, Shirley VK7HSC and Max VK7KY visited me. Many curious on-lookers called by wondering just what was going on..... and some took away brochures on Amateur Radio.

It was a great weekend ..... in a place with a 'million dollar view'.

Winston VK7EM

ar

International Lighthouse/ Lightship Weekend

Cooktown 2008

Ross Anderson VK4AQ and Wayne Richter VK4ARW

For the fourth year running, the Tableland Radio Group (Atherton Tablelands) activated the Grassy Hill Lighthouse at Cooktown for the International Lighthouse and Lightship Weekend on 15 – 16 August.

Preparations for this annual adventure started as the 2007 weekend drew to a close. From our very first ILLW activity we realized that the learning curve was to be fairly acute and this has proved to be the case over the years. Much equipment checking and revamping was undertaken during the year and old ideas improved upon. A new vertical antenna for 20 metres was constructed, This was a back-up in case the notorious Grassy Hill high wind gusts made it unwise to launch the three element 20 metre mono-bander.

Another new project for this year was the production of a series of notch filters made up by Bill VK4WL and Mike VK4MIK. Dennis VK4JDJ had done much work on tower stanchions during the year and from which he was able to swing a full wave 80 m square loop for the 2008 activity. Well, sort of square, as the lay of the land dictated. Its configuration certainly did not diminish the performance of this fine antenna on the day.

Our Group members travelled from Innisfail, Ravenshoe, Herberton, Atherton and Mareeba to join up in a seven car convoy for departure from Mareeba at 9 a.m. on Friday morning. Convoy communications was set on Ch 50 and planned stops at Mt Molloy for smoko, Lakeland Downs for lunch and fuel and arrival at Cooktown by 2 p.m. The road to Cooktown is all sealed now and much of it is zoned 110 kph.

However extra care is needed as much of the road is unfenced and livestock, kangaroos and pigs roam at will. By travelling after 9 a.m. such encounters are significantly reduced.

We used a different motel this trip; a very popular choice. The location was ideal, facilities first class and the owners were extremely kind and friendly. Friday afternoon was spent relaxing over drinks and the conversation ranged between the serious and hilarious. As ever, everyone present managed to learn something new from the gathering. However one does need to have a thick hide to survive one of these weekends! A lovely poolside BBQ on Friday evening rounded out a rather marvellous, power-packed day.

On Saturday Mike VK4MIK and Wayne VK4ARW were up by 5 a.m. ready to start their early morning walk and, despite my protestation, they would not have it that I had already been for a brisk walk. I wonder if my pyjamas gave it away?

An 8 a.m. start saw the team assembled at Grassy Hill ready to begin the task of erecting a 10 metre mast for a three element 20 metre beam and an 80 metre loop. The antennas were erected without incident, if you do not count a ring barked shin, a split toe and a gravel rash or two from going over the side of the hill. You will wear those thongy safety boots, Dennis!

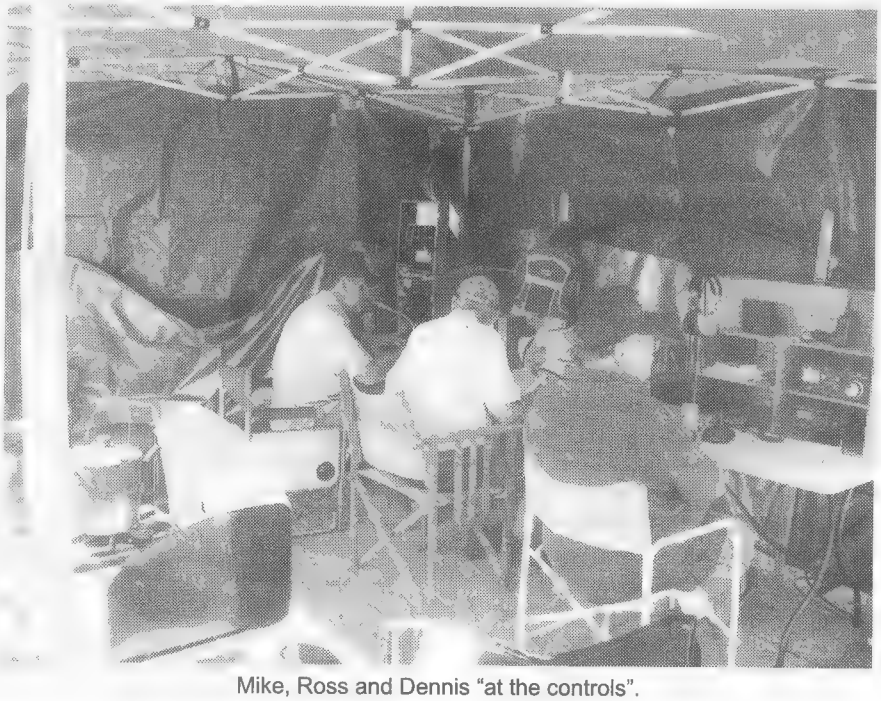
The shack, a three metre square pergola, was the next item put up and duly wind proofed before the rigs and ancillary equipment was installed. Leisurely but competent progress throughout the forenoon saw everything in place, checked out and ready for the 1000 start. Well, we had about ten seconds to spare, anyway.

Two operating positions were set up with one dedicated to 20 m and the other to the 80 and 40 m bands. Two FT-897D transceivers were used for the entire operation. Back-up rigs were on hand but were not needed, fortunately. Power was provided by banks of gel cells topped up by solar power.

Right on commencement time a call was put out and before long a steady stream of stations was being logged.

The 20 metre station performed better than expected with strong signals received and excellent transmitted audio reports. Wayne VK4ARW was quite pleased to be rewarded for all the hard work he had put into getting this station together.

The group callsign of VK4GHL was used for the event and we were on air continuously from 1000 Friday until 1200 Sunday. The number of stations



Mike, Ross and Dennis "at the controls".

worked on Saturday belied the state of the ionosphere but that was short lived when the RD contest started. To continue getting contacts we had to resort to giving numbers in the contest which did not sit well with our operators.

Throughout our time on the hill, Rossco's camp kitchen got its baptism under fire and passed with flying colours. A couple of tent pegs were required to stop it blowing off the hill and a modification to the wind break was needed but it worked overtime nonetheless. Plenty of brews were made to keep the cold out – and it did get cold during Saturday evening and early Sunday morning despite two thermometers showing 19 degrees at the time.

On Sunday morning Mike VK4MIK was interviewed by Macca on the ABC's Australia All Over where he made it known what we were doing. Before long, we had a steady but interested stream of visitors, locals and tourists, at our site asking any manner of questions.

The strength of the wind on Grassy Hill is well known and operating from there involves being able to work DX whilst keeping all the gear firmly located on the hill. It was quite amazing the number of the stations we worked who had first hand experience of our wind from previous visits to Cooktown.

It was after some unusually strong gusts of wind on Sunday, around noon, that we decided it would be wise to take the 20 metre beam down. Unfortunately, dropping the beam meant we had to take the rest of the station down as well, so cessation of operations occurred at midday, some three hours sooner than we would have liked.

Apart from young Stanley VK4MFA going for an untimely slide down the side of the hill, the disassembly of the station went without incident and we were back at our accommodation by 1.30 p.m. We suspect young Stan really had the right idea in that as soon as his knee was swabbed and bandaged he was made sit in an easy chair with his leg up and was the only member of the group allowed to have an early beer.

Sunday afternoon saw the group, XYLs included, sitting around on the lawn yarning, having a beer and discussing next year's weekend, new ideas and areas for improvement. A communal supper of fish and chips, great company and incessant hilarity brought the day to a very successful close.

On Monday morning the group attended the Long Tan Remembrance Day service at the Cooktown cenotaph. It was really lovely to see the whole group support our four returned veterans who laid a wreath on behalf of the TRG at this ceremony.

After such a successful weekend, one's mind always turns to how the event could be made better next year.

Perhaps a more wind-tolerant shack? Better equipment? A better location even?

After thinking through the different aspects of this most recent weekend, it really is difficult to think of anything that needs to be changed. Having the power to turn the "big fan on the hill" down would be nice though.

This does not mean that improvements cannot be made, however, and every event sees the members' skills improve and increased confidence pushes the boundaries further. There is always something to learn and existing knowledge tested and shared. One thing is assured, and that is that the more technically minded of our group will have something new up their sleeve for next year.

The road leading up to the Light will be sealed shortly, as will the turning circle on which we set up our base camp. As a result we will lose some of the space we currently enjoy and a reduction in manpower on site time seems inevitable.

For the statistically minded, a total of 232 contacts was made during 26 hours of continuous operating, including stations from New Zealand, the United Kingdom, Germany, Russia, Indonesia and Guam. We managed to contact most Australian Lights over the weekend. Not as many CW contacts were made as was hoped and problems with our laptop saw the early cessation of PSK operations.

One particular highlight was our QSO with GW0VMK/P operated by Ian at Port Hollyhead in Wales. Ian said his weekend was made by the contact with a VK Lighthouse.

TRG operators participating this year were Mike VK4MIK, Wayne VK4ARW, Stan VK4MFA, Billy VK4WL, Dennis VK4JDJ, Jeff VK4BOF, Dave VK4FUY, Pat VK4MUY and Ross VK4AQ.

The running of two events, the ILLW and the RD Contest on the same weekend polarizes participants and that is not good for the hobby in my view. I hope some sort of compromise can be sorted out before next year.

Summarizing the weekend, I think I could say our hobby is alive and well. We established an effective and efficient portable amateur station equal to most home stations and we were on air for the maximum time possible. All activities were carried out safely, professionally and in good order.

As usual, all participants worked particularly well together with abundance of humour and good intent and always in keeping with the Amateur Operators Creed. These expeditions mean something different to each Group member and we all went home with our expectations met. During the year, TRG members had expeditions to Karumba on the Gulf of Carpentaria, Conjuboy Cattle Station in the western gulf district, Koombooloomba Dam, as well as Laura and Cooktown on separate visits.

Work now begins on ILLW 2009.

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(Back L-R) Billy VK4WL, Wayne VK4ARW, Jeff VK4BOF, Mike VK4MIK (Seated L-R) Rossco VK4AQ, Dennis VK4JDJ, Stan VK4MFA at the base of the light.

Silent Key

Reg Galle VK5QR - SK.

All those interested in long distance VHF/UHF/microwave propagation will regret the death of Reg Galle VK5QR on 12 September 2008. Reg was a leading pioneer of the use of these amateur radio bands.

On 31 December 1951, Reg made a 144 MHz Australian record distance of 2,122 km with a contact with the late Rolo Everingham VK6BO in Perth (just short of the then world record of 2,253 km). He then continued to seek answers to questions regarding the propagation on the higher bands.

Reg became the Adelaide end of record breaking distances on 432, 1296, 2304 and 3456 MHz across the Great Australian Bight with Wally Green VK6WG in Albany.

Reg and Wally, as true amateurs with no professional engineering backgrounds, built equipment for these UHF/microwave bands and were nearly 2,000 km apart so that there were no 'local' tests with each other. There were no precedents in Australia, and few in the world, for trying to make contacts over this distance.

In 1977, on 25 January, they bridged the 1296 MHz path for a world record distance of 1,885 km. The following year, on 17 February 1978, Reg and Wally made their first contact on the 2304 MHz band. Reg used SSB that was processed in a divide by six circuit and mixed to 28 MHz. The 28 MHz signal, with processed SSB, was then transverted to 384 MHz and then tripled and doubled to 2304 MHz. This multiplication by six restored the original SSB!

To give you a feel of the type of gear in use 30 years ago, Wally Green VK6WG used a modified World War II SCR522 which, from a 7 MHz crystal, produced 128 MHz. This was then multiplied to 384 MHz with a BAY96 varactor tripler to 1152 MHz, in a modified Microwave Modules MMV1296, and then doubled in by a 2C39 which drew 90 mA at 600 V.

In 1986, Reg and Wally completed their first 3456 MHz contact using CW. This distance of 1885 km and that on 2304 MHz remain the Australian record distances.

Both Wally and Reg built equipment for the 5.7 GHz band and made tests on that band without success although Reg claimed that they could have had a contact had Wally not been in the midst of making apricot jam on that day!

Reg gradually lost interest in pushing the boundaries further and had been in poor health in recent years. His death followed several strokes. The most recent one returned him to hospital just over a week ago but he insisted that he wanted to go home despite living alone and with no close relatives in Adelaide. A nurse watched over him and he was able to fulfil his wish of dying at home in his own bed! Reg was 96 years old!

Farewell to a tremendous pioneer on the higher bands! 73

Wally Howse VK6KZ

ar

Reg Galle VK5QR.

VK5QR's antenna farm.

Over to you

7th September 2008
Dear Editor

Westlakes contesters

The September issue of Amateur Radio arrived during the week. An article at the foot of the contest page which, in part read:

> "With the demise of Westlakes contesting contingent, VK2ATZ might take some time to recover and be again the force that it once was. Alternatives have been arranged and the driving forces behind the rise of VK2ATZ will rise, phoenix style, to do battle again on the bands - but with an alternative callsign....."

came as a surprise to me and no doubt our Contest Manager, as well as the majority of Westlakes members.

Those members who called themselves the contest team, for reason best known to themselves, did not wish to join the club and operate portable as VK2ATZ at Norah Head, opting instead to break away and operate as VK2AWA.

That does not mean that VK2ATZ has or had intention of leaving the contest arena.

Members operating as VK2ATZ portable participated in both the RD Contest and the Lighthouse Event and acquitted themselves well.

Frank Lusa VK2FJL

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Tower and TH6DXX raising at VK3PDX QTH

David Helyar VK3PDX

Moving house is quite a task for everyone but amateurs have a very special problem: the tower! Not only is it an awkward shape and tricky to get down but it needs to be refurbished and then mounted securely when you get it to its new location. As David shows, the upside of a rural location is the access to mates with skills and big machines. The downside is the birds.

I shifted from Traralgon to Tinamba, about 50 km to the north east, almost eight years ago. In Traralgon I had a Nally tower with a TH6DXX atop, and a detached flat for a radio shack (three rooms including toilet), but no rotator, except for Mr Armstrong.

Having moved to Tinamba, I began the slow process of rebuilding my amateur station. This started to come along when an opportunity came up to buy the house next door. This was on a block and a half with a two hectare paddock - just fine for amateur radio, so we moved again.

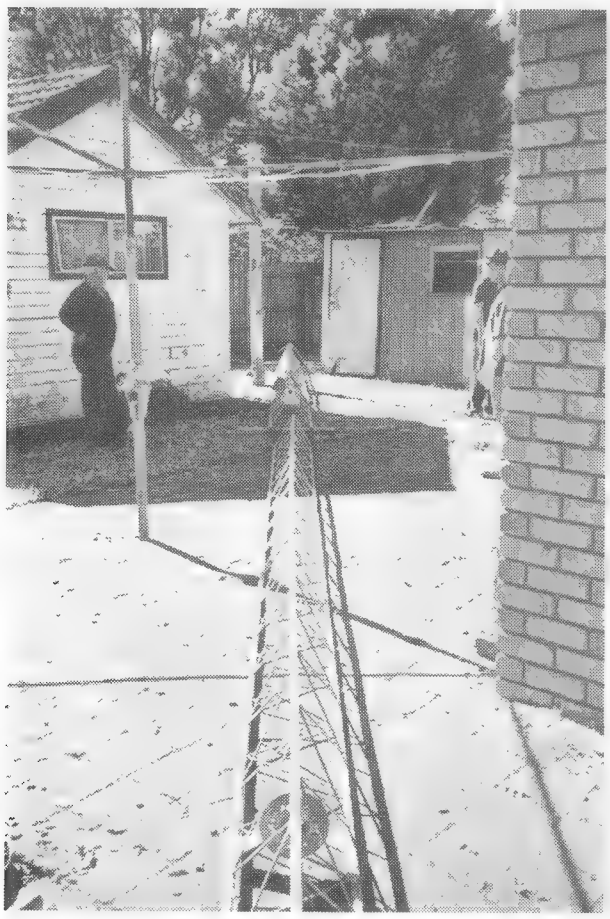

Photo 1: The Nally on the ground, in Traralgon.

Once we had done all the important things associated with the shift, I again began to re-assemble my radio shack and tower. Photo 1 shows the Nally on the ground in Traralgon.

The Nally tower has, in itself, had an interesting 'history'. I purchased the tower from another amateur, Barry VK3BDG, in Mirboo North. Barry, Peter VK3NPI and I moved the tower to Traralgon and eventually put it up.

Through circumstances we had to shift from Traralgon, and so did the tower. Before leaving Traralgon I had acquired a replacement in-ground section from a local fabrication shop for the price of a box of beer, a fair exchange I thought!

I now had to get it joined. As it happened, the people to whom we sold the first Tinamba house was a welder by trade. He was able to roll a joining section for the tower and, on Christmas Eve, welded it together.

Next I had a hole augured into the ground using a local contractor, and a few weeks later stood the pole in the ground and poured the concrete. Refer to Photo 2.

Then I needed to (1) fix the TH6DXX, (2) buy a rotator, (3) make a base for the rotator, (4) get new coax, and (5) do 100 other things to get ready to raise the tower and get the antenna in the air.

Photo 3 shows the condition of the trap covers on the TH6DXX. I wanted to improve on this and try and make them bird proof! After some thought, I decided on a two pronged attack. First was to strengthen the trap caps and then make it more difficult for the birds to attack them.

The first I achieved by using a very strong and thick heat shrink product (Butyl heatshrink), and the latter by spiking them with cable ties, hoping that both of these things would not affect the performance of the traps too much. You can see the result in Photo 4.

Once the TH6DXX had been prepared, which was prior to the tower raising day, there were a number of other things to prepare on the day itself. First was the base mount for the rotator and secondly was a thrust bearing to take the weight of the antennas, and allow the rotator to do the job of just turning the antenna array.

The rotator came with a template for the base mount, but this was slightly inaccurate; it also did not allow for centreing the rotator, so the fixing holes in the base plate were elongated to allow this to happen. Then the base plate was welded to the tower.

I also had to find approximately 20 meters of eight core cable for the rotator controller, join the cable to the plug and socket, test the connectors by metering, and then undertake the real test - connection to the rotator and a bench test. This worked first time.

I also decided to use as low a loss coax as I could afford (get away with!), so I sourced and purchased two thirds of a roll of Belden RF400 (although I am yet to buy the appropriate connectors, and am currently using PL259s).

Photo 5 shows the welding of the base plate to the tower. Once this was

complete a thrust bearing was put in place. This I decided to do by simply making a collar to fit around the mast tube, and then I used a piece of scrap switchboard material, which was flat, smooth and impervious to water, as a 'bearing' between the base of the collar and the top plate of the tower.

The advantage of this arrangement over a conventional bearing is that it requires no lubrication, is self cleaning and has low frictional resistance. That is what I hope anyway!

Photo 6 shows the lattice section of the tower being placed onto the base. We utilized a neighbour's tractor to lift the lower tower section into place; it made the task very simple and very safe, as the load was steady and secure.

Once the tower and associated hardware was attached (winch cables, inner section and so on), we were able to centre the rotator and attach the mast pole. For a mast pole I purchased a 4.9 m length of thick walled scaffold tubing, perfect for the job. This was sourced from a local metal supplier, after some phoning around and bargaining!

Photo 2: The tower pole in ground outside the shack, at Tinamba.

Photo 3: The TH6DXX traps before refurbishment.

The next task was to assemble the TH6DXX and attach it to the tower, a difficult job as it is a large antenna and requires many screws, nuts and washers, as well as ensuring that all the elements are in the correct position and at the right length. I had previously measured and fitted all the elements together.

I used stainless steel screws, as all previous screws (metal and aluminium) were rusted or damaged. I also used an aluminium joining compound between all element joins. You can see the elements ready for assembly in Photo 7.

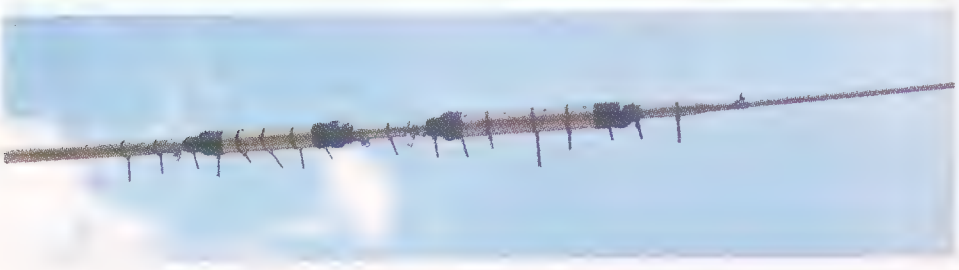

Photo 4: The traps as they appeared after the two pronged refurbishment was completed.

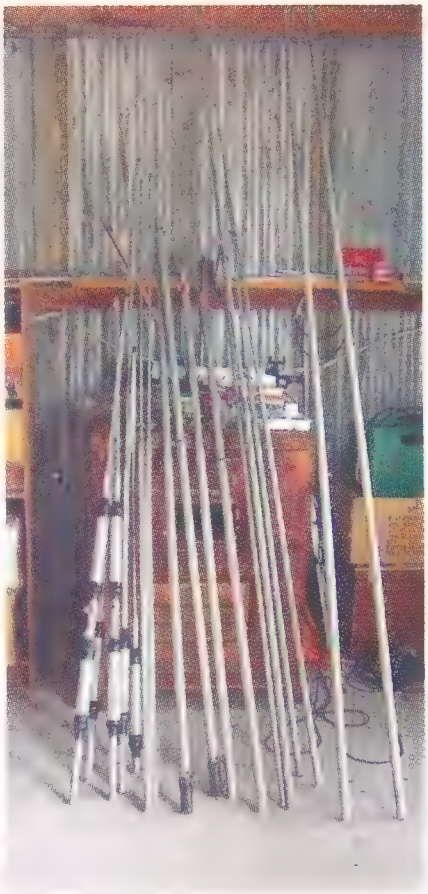

Photo 7: The TH6DXX elements assembled and ready for erection.

After getting it all in the air, I took it all down just a few days later in order to bird-proof all the coax on the antenna, as I had used RF400 coax, which is not inexpensive. I did not want to have the birds make a meal of it!

On the top of the mast pole is a dual band J pole constructed by Mike VK3XL, which I am currently testing. The tower will also eventually support a 2 m and 70 cm Yagi. Photo 8 shows the completed TH6DXX atop the tower.

I would like to thank some of the people who encouraged me with this project.

First off my wife Nelly, who may now have second thoughts about the radio shack, Peter VK3NPI and Mike VK3XL for months of egging on and much help and assistance on the day, along with George VK3GWK and, finally, two neighbours, Graeme and Craig.

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Photo 5: Welding the base plate to the tower.

Photo 6: The lattice section being placed onto the in ground pole.

Photo 8: The TH6DXX atop the tower.

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See you at Ballarat Hamfest
Sunday 26th October

News from

VK2

Tim Mills VK2ZTM
arnews@tpg.com.au

Clubs

It was good to see so many VK2 clubs and groups taking part in this year's Lighthouse operation. Manly Warringah RC had a story and picture in the local paper. Illawarra ARS was covered on the local TV news. Others taking part were Waverley, Taree, Oxley Region and Summerland. If you have some pictures and a story, send it off to AR. Also do this with any other of your activities that you think news worthy.

Oxley Region ARC, covering the Port Macquarie and Wauchope sector of the Mid North Coast has for many years met at the SES HQ in Port. The SES has been building a new headquarters in Port and during this period the Club has been meeting at the Port City Bowling Club. Following a period of discussion, the Oxley Club, by becoming more involved with the local SES, will be able to utilize the new SES facilities. The Club station - VK2BOR - was active in both the Lighthouse and RD in August in the comfort of their new acquisition: "the caravan". Oxley had a busy month in August, it was also the AGM but there was very little rearrangement of the chairs. You can check out more on the happenings at www.orarc.org

The Central Coast ARC has advised that the date of the 2009 Field Day is confirmed as Sunday 8th February, a slight adjustment to an earlier date. Those under 17 will have free admission. If you have suggestions about the event to put to the Field Day committee, contact Ray VK2HAY on 02 4325 2182. The CCARC have been opening the Club rooms at Kariong on Saturday morning, both for the social gathering as well as a bit of a working bee. They have also been active at the Somersby repeater site with maintenance and upgrade.

The Illawarra ARS have a major auction for their November meeting, the second Tuesday.

The first field day in VK2 for 2009 will be that offered by the **Mid North Coast ARG** with their Radio Expo on Sunday 18th January. The same venue as in previous years: the St Johns Church Hall in McLean Street, Coffs Harbour. The Group has recently commissioned a 70 cm repeater for the region: VK2RMG on 438.125 MHz with a 123 Hz CTCSS tone. A two metre system is to follow and will be above 147 MHz. The Group produces several kits; the proceeds go to setting and maintaining these repeater facilities. One such kit is the HF Ozi-Wire antenna, details of which are in October Hamads, in the 'For sale NSW'. More details about the Group at www.mncarg.org

The Blue Mountains Winterfest, held for the first time this year on a Sunday, a perfect winter's day last August, was well attended. **The BMARC** meet at a Scout Hall in Glenbrook on the first Friday of the month.

ARNSW

The ARNSW Home Brew Group, who met for some time in the party room at McDonalds North Parramatta, took up an offer from one of the Group to meet in his garage, a location suitable for more hands-on activities. The new venue is in the district of Ryde, down near the Parramatta River. Details and contact details on the ARNSW web site and the VK2WI news bulletins.

Terry VK2UX, the ARNSW Education Officer, was interviewed late May, on ABC 702 Sydney during the afternoon drive show. Terry got a ten minute plug in for the hobby, Foundation licences and the history of communication by Morse code.

The VK2WI news sessions, since the late 1970s, have used AWA J54-800 transmitters for the lower HF frequencies: 160, 80 & 40 metres in the AM mode. These transmitters were built in the early 1950s and spent their first 25 years in service at Coffs Harbour with DCA. They then found their way to VK2WI where they have provided faithful service. Now showing their age, the rubber shielded wiring is starting to fail in some of the units. The 80 metre transmitter has this problem and has been retired and will be replaced by a later generation unit, also from the AWA stable. In the meantime the service is being provided in the SSB mode. AM will be maintained to serve those listeners, of which there are many, using shortwave receivers.

Memo to clubs, groups and VK2 amateurs that VK2WI, with the coverage provided direct and via the various relay stations, welcomes your news segments. Send it via email to arnews@tpg.com.au to arrive by Friday afternoon. Other, older addresses may introduce delays. The other slow way is mail to P. O. Box 6044, Dural Delivery Centre NSW 2158. This is also the contact point for ARNSW, the trading name used by the NSW Division.

Daylight saving is with us again. Time to renew those smoke alarm and clock batteries. VK2WI broadcasts are in the final quarter for the year and the evening session will end on December 21st. It will then be morning only until January 18th 2009. We need more announcers and engineers to join the team in 2009 to help spread the load. Please consider joining the team.

As mentioned in the VHF/UHF notes last month under 'beacons', the VK2RSY 23 cm beacon, located at the VK2WI site has a new transmitter with a power increase to 20 watts. There was some interaction with the 23 cm repeater, the input and beacon frequencies are not that far apart. The beacon has filtering on its output and has been heard in VK1. 1296.420 MHz, keyed in CW. The repeater is now diplexed to a lower antenna until some rearrangements are carried out.

Modes come and go. A few decades ago Packet was the data mode with many digipeaters throughout the country. VK2WI still has a 2 m and 70 cm system. Are there any other systems still operational?

73 – Tim VK2ZTM.

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VK3

Terry Murphy VK3UP
Website:www.amateurradio.com.au
Email: arv@amateurradio.com.au

National Parks award begins

The rules and requirements for the new Keith Roget Memorial National Parks Award have been released just in time for the warmer weather months.

As part of its planning for the revival of this award, which ceased in the mid-1980s, Amateur Radio Victoria held discussions with Parks Victoria which is very supportive and it has notified its park rangers of the details.

Check out the website for the locations of the 40 parks which include some eight within the Greater Melbourne area alone. No matter where you live in the state there will be a national park within easy travel distance. Suggested log sheets are available for downloading.

Award Manager Chris Chapman VK3QB advises that a special activity period has been declared for 1-4 November which includes the Melbourne Cup holiday.

Those intending to activate a park at any time are encouraged to publicise their plans by sending an email to awards@amateurradio.com.au

Details of the Victorian Local Government Award can also be found in the Awards section of the website.

VK3RTV to go digital

A proposal has been announced to digitise the amateur television repeater VK3RTV on Mt Dandenong that covers Melbourne and Geelong.

Peter Cossins VK3BFG has drawn up a plan for a project to use German made commercial modules and a linear amplifier to convert this repeater to digital transmission.

To receive the digitised ATV repeater would require one of the now readily available set-up boxes that convert off air digital TV signals so they can be seen on an ordinary analogue receiver.

Peter VK3BFG believes the project should stimulate more activity on ATV. The plan is start in December and its completion will depend on securing the necessary funding.

Western Victoria repeaters

Amateur Radio Victoria's Peter Mill VK3APO and Barry Robinson VK3JBR last month visited the Mt Arapiles and Mt William repeater sites.

The Mt Arapiles 2 m repeater VK3RWM has been put back on air, although there is still more work to be done.

A new commercial specification transmitter and new filtering were installed. The antenna system checked out okay.

The repeater is experiencing some desensing and interference. These matters have been fully identified and are being addressed as quickly as possible. Users of the repeater will find that weaker signals experience difficulty at times.

The Mt William 2 m repeater VK3RWZ had a faulty antenna and failed transmitter. A new antenna and rigging at a cost of several thousand dollars is required before this repeater can be put back on air. Amateur Radio Victoria is arranging for that work to be done.

The VK3RWU 70 cm repeater on Mt William was also checked and found to be working well.

Foundation class

The next weekend training and assessment sessions for the Foundation Licence will 18 & 19 October. For inquiries or to enrol contact Barry Robinson VK3JBR 0428 516 001or arv@amateurradio.com.au

Ham radio in new film

A television drama called Tangle was shot in the suburb of Kew last month, and the ten part series includes amateur radio in contact with cosmonauts in space.

The production company, Southern Star, asking Amateur Radio Victoria for help and it has loaned it suitable equipment plus other items. Tangle is due to premiere in 2009.

Help wanted

The great grand-daughter of Australian inventor Henry Sutton would dearly like to know about his amateur radio activities and in particular the callsign he used.

Lorayne Branch has found that he was issued the No. 2 amateur experimental radio licence in 1909.

Henry Sutton lived in Erskine Street, Malvern. If you can help please email her at my_lulu27@hotmail.com

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News from VK5

Christine Taylor VK5CTY

Adelaide Hills Amateur Radio Society

VK5 has, for at least 40 years, had a Sunday morning broadcast. In the beginning different people, in turn, made their reports. Later one person gathered the reports by going to different houses and making a recording on the spot.

When Murray VK5ZQ became broadcast operator he took recordings from the phone and collated them into a cohesive broadcast with additional information or stories that he gleaned from the magazines and later from the internet.

By the time Murray was relieved of the regular commitment, instead of originating the broadcast from his home via the Adelaide repeater, Murray (or sometimes a substitute) would take the composite recording to the Burley Griffin Building and transmit it to the repeater from the WIA (SA) headquarters.

Toward the end of Murray's time, the National Broadcast became a reality so the VK5 session was added after that finished.

In VK5 we still have a local session after the national broadcast, at the August meeting Brian VK5VI gave AHARS members an insight into how this session is now produced.

Most local clubs give a report of recent activities and advise listeners of forthcoming events, by creating an MP3 file though their computer. This is sent by email to the coordinator who collates it all ready for transmission.

For a time this transmission originated at the EARC Water Tower, initially when someone went to the tower and started the transmitters. Now everything is done remotely so no-one has to get up early enough to be there on time, even including setting the repeater to continuous operation.

Over the years, with the assistance of local amateurs, the VK5 broadcast can be heard over almost all the state, and into several areas bordering the state, including via the Darwin repeater.

Brian's talk was very interesting and well received.

After supper we had a mini-talk from Robin VK5ATT, about his battle to prove that the voltage he was getting from the Electricity Trust was both fluctuating and over-voltage.

Robin bought an expensive but useful multimeter that could make a continuous record of whatever it was measuring and could be connected to a computer where it could be looked at in more detail and so a permanent record could be kept.

The multimeter had a visual display, read voltages etc both digitally and as an analogue record and could even be set to show the readings graphically, on the spot.

It was when a number of the modern, folded fluorescent tubes failed after too short a time that Robin set out to find out why.

The story and demonstration of how Robin won the argument with the local electricity supplier and had them do something about his over-voltage, made an interesting lecture.

All AHARS lectures are digitally recorded and made into DVDs for borrowing by club members. If clubs from elsewhere are interested in any particular lecture the club would like to hear from you perhaps to arrange a loan or copy for you.

Our meetings are held on the third Thursday of the month and visitors are always welcome. Please contact either John VK5EMI or David VK5AMK for more information.

Corrections from September news.

Lyle's callsign is VK5ZNB not VK5XNB.

In the article on the luncheon, VK5FLKM is Lauren not Laura.

VK5ZAT is Nick, her father not OM nor is he called Robin. He is an executive with Foxtel not a driver.

My apologies, Christine.

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DO NOT FORGET THE AHARS BUY AND SELL

It is on Sunday 9th November at the Goodwood Community Centre in Rosa Street Unley. Doors open to public at 9.30 am. See the flyer included in this issue of AR: New day – Sunday, new venue – Goodwood Community Centre.

Radio Amateurs Old Timers Club of SA

Annual luncheon Thursday 23 October 2008

(12 noon for 12:30 lunch). (Please bring your Seniors Card.)

Marion Hotel, Marion Road, Mitchell Park

Public transport Bus M44, Stop 24

RSVP to one of the following committee members before 20 October 2008:

Secretary: Ray Deane VK5RK. Phone: 8271 5401

Assistant Sec.: Ron Coat VK5RV. Phone 8296 6681

Ray Deane, Honorary Secretary

AHARS Buy and Sell

SUNDAY 9th November

New Venue Goodwood Community Centre, Rosa Street off Goodwood Road

Doors open 9.30 am.

ALARA food and drink plus Barbecue lunch

Come and meet all your friends

News from VK6

Keith VK6XH
vk6xh@wia.org.au

It is unfortunate that I have to start off this month's notes with a silent key announcement.

Bernie Sommerhayes Smith VK6BSS passed away on 27/8/2008.

Bernie was born in Carnarvon on 16 October 1927 and spent most of his youth near Gascoyne Junction on Towrana Station. His wife Enga tells me he left school at about age eleven and was a self educated man who could turn his hand to almost anything.

He returned to the area in 1971 and had lived in East Carnarvon ever since. He was licensed as VK6BSS and for many years was an extremely active controller of the 21.185 MHz Novice Travellers' Net, a vital link in communications from the West Coast.

He met many travellers as they passed through Carnarvon and I am sure there are quite a few Grey Nomads who will remember him and Enga.

He is survived by his wife and three children and has left a gap that will be hard to fill in amateur radio in the West. Vale Bernie.

Hamfest 2008

As promised in last month's column, here is a further report on this year's Hamfest.

The NCRG Hamfest was once again a huge success. Held at the same venue as previous years, the organisers were delighted with the presence of eastern states traders this year.

Vertex put on a large display with the assistance of their local dealers, City Online and Tower Communications. Tower Communications also represented Icom and City Online represented Kenwood, QuanSheng and Vibroplex to name a few.

Bushcomm were also present, accompanied by Tet Emtron, and Allcom showed their range of CB and commercial radio equipment. Unfortunately Terlin Outbacker had to cancel at the last minute due to family health problems; Terry is a staunch supporter of Hamfest every year.

The many groups in the state had their individual stands including the VHF Group, Peel Group, WARG and the D-STAR group, and of course the WIA.

The bring and buy did a roaring trade this year and the raffle was well patronised. A list of prizes was published in last month's column and once again I would like to thank all those who donated.

In 2007 the special attraction was the Tesla Display which certainly caught everyone's attention. This year the featured display was by the Gravity Centre, located in GinGin north of Perth. This is a scientific display centre featuring the effects of gravity, astronomy and other interesting related subjects. Well worth a visit if you can.

To compliment this display, Midland Camera House and BTOW both displayed telescopes to tempt us into yet another hobby!!

The problem facing the organisers is what to have next year!

One feature that attracts people to take a table at the Hamfest is the NCRG do not charge for table hire at all: top that, other Hamfest organisers. Almost 400 people had a great time and enjoyed a great social get together.

ILLW

The lighthouse weekend saw Wally VK6YS at Cape Leeuwin and Nigel VK6KHD, ably assisted by Bernard VK6FBRB and Jane VK6FJPD, at Cape Naturaliste. Over the weekend around 25 lighthouses across Australia and New Zealand were worked at both locations plus a large number of other stations in the Remembrance Day contest. Special event call signs were used, VK6CLL for Cape Leeuwin and VK6CNL for Cape Naturaliste.

Shaun VK6FSAP helped Wally VK6YS set up the antennas at Cape Leeuwin on the Friday afternoon, and then came back to assist with operations on the Sunday. Help which was greatly appreciated given that there were literally hundreds of visitors to the Lighthouse over the weekend and on the Saturday most of the time was spent talking to the visitors rather than on the radio making contacts.

There were many other activities at the Cape Leeuwin lighthouse during the weekend, with talks by retired lighthouse keepers, discussions with people born and raised at lighthouses, and local craft and country ladies adding displays. All the lighthouse guides and even the ladies running the cafe/restaurant were dressed in costumes from 100 years ago.

Overall a wonderful weekend for the many tourists and local visitors to the light with the added bonus of seeing an amateur radio station in action.

The log for VK6CNL is available on line at:

http://www.westozdx.net/LIGHTHOUSES/LIGHTHOUSES.html , with the log for VK6CLL to follow.

Contesting

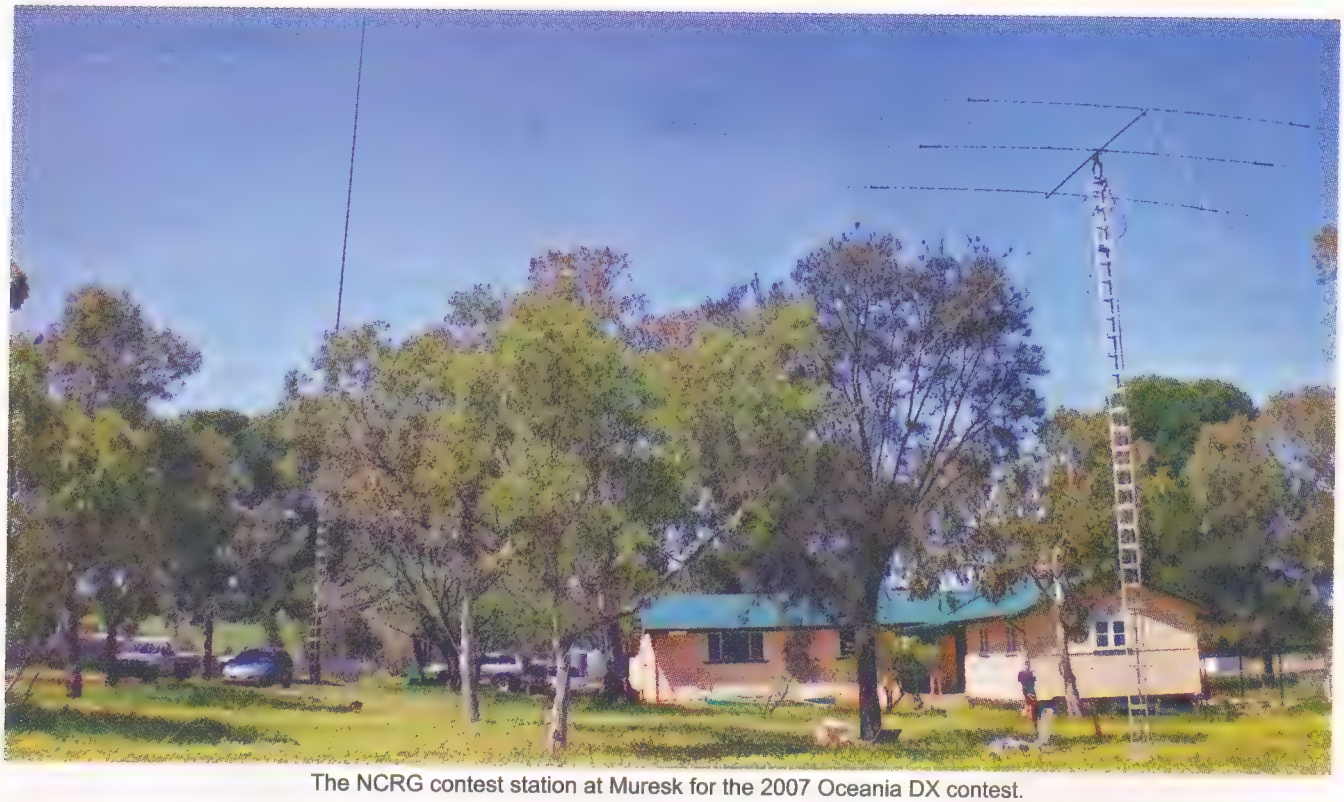
The contest season is now upon us and the RD contest results will be available soon, I hope, but do not forget the other contests happening.

The All Asia DX Contest was held on the weekend of 6/7 September and a good participation by the NCRG team saw them hopefully take first place in the multi single section for Australia.

The same team but with a few more operators will also be active in the Oceania DX contest on the weekend of 4/5 October, but from the portable location at Muresk Agricultural College near Northam, a good weekend away with lots of antenna experimentation and the occasional beer!

This is a good contest for us VK/ZL operators as the rest of the world is trying to contact us for a change, give it a go.

Now from the South West Capes



The NCRG contest station at Muresk for the 2007 Oceania DX contest.

region of WA, a message from Phil VK6SO:

We are seeking expressions of interest from amateurs, electronics enthusiasts and like minded souls to determine if it would be possible to form a club in Busselton, covering the South West Capes region of WA.

As it is 50 km from the nearest club in Bunbury, it would be more practical if local amateurs could meet here. I have booked the Senior Citizens Club, 22 Peel St, Busselton for Saturday 18 October from two to four pm for those who may be interested to get together to see if a club is a practical possibility.

Interested persons can contact Phil on 9751 5560 or 0419040388 or by email to phil.vk6so@gmail.com

Good luck guys and let me know how it goes.

That is it for this month - may your antennas pick up at least some DX!

73 Keith VK6XH vk6xh@wia.org.au

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Silent Key

Keith Roy McCarthy VK3JNB.

Keith Roy McCarthy VK3JNB succumbed to cancer on Sunday 27 July 2008, aged 68.

The Moorabbin and District Radio Club Committee and members would like to offer our condolences to Lyn and her family at this time. Keith was a gifted man who had many interests. An accountant by profession, he loved listening to music and working at oil paintings. The earliest entry against Keith's name in our club records was 17 May 1996, being $50.00 for classes. His involvement with MDRC had begun.

Keith became Treasurer in July 1999 and was a steadying hand and prudent steward. As Club Treasurer and later as President from 2001 to 2003, Keith served with distinction. He was loyal, passionate, professional and a strategic thinker.

One of Keith's outward looking MDRC initiatives was the "APC News weekly broadcast" co-established by him in 1999. APC News won instant acceptance with listeners and readership in the state and beyond. As Keith said, 'its reach extended beyond the MDRC, benefiting both it and amateur radio generally'. If any club wanted to publicise a special event, it would be submitted to APC News. And if it was not submitted then the details would probably be found, and it would go to air anyway!

APC News ran for four years. Keith wrote and presented 200 broadcasts involving over 100 hours of air time and 600,000 words. This required a professional level of commitment that only Keith could give.

One of the many items Keith wrote was 'Ham Sandwich'. A product of Keith's perceptive mind and sharp wit, 'Old Man Ham Sandwich' caused laughter or introspection, depending on the item. All this was part of the bigger picture that Keith could see so well. Other club activities Keith immersed himself included the Tuesday night meetings, crystal set competitions at the Club's Hamfest, appearance on Southern FM Community radio, promoting the club at the St Kilda Hobby Show, ATV and more.

More recently he attended the MDRC Tuesday morning meetings. Keith was a researcher and would photocopy information on issues or problems that needed a solution and distribute it to those who may be interested.

Keith served amateur radio well, through his contributions and membership of the Moorabbin and District Radio Club, the Wireless Institute of Australia and the CW Operators QRP Club. He was a great friend to me. He will be missed.

Submitted by Ian Morris VK3IFM.

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News from VK7

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au Regional Web Site: reast.asn.au

North West Tasmania Amateur Radio Interest Group

NWTARIG has formed a Radio Experimenters and Social Group which met for the first time on August 23. The meeting convenor was Vernon VK7TVF and it was well attended with nine amateurs, and three partners attending. It was resolved to regularly meet with a social and experimenting focus.

The International Lighthouse and Lightship Weekend (ILLW) saw Winston VK7EM at Mersey Bluff and Wayne VK7FWAY and Eric VK7FEJE at Table Cape lighthouses and by all reports it was a great weekend of contacting other lighthouses all over the region.

The impressive QSL card of Winston VK7EM.

Northern Tasmania Amateur Radio Club

In the North, the ILLW saw Bill VK7MX and son Duncan VK7FLAK based at Low Head Lighthouse.

There was some sad news from the North with an AR institution coming to an end: the regular coffee mornings at the Hunga Munga Café in Launceston owned by David VK7YUM. The café has been sold and NTARC is looking for a new venue. Thanks to David and family for a great five years of service to the AR community in Launceston.

The August NTARC meeting was a dinner meeting with Professor Nigel Fortheath presenting a thought provoking talk on what it means to be a Justice of the Peace: Thanks Nigel.

118 km Non-Line-Of-Sight Optical Contact

Monday 8th September saw the next milestone reached in the VK7 optical experimentation with a one way non-line of sight optical communications contact made. More information can be found in the Digital DX section of the VHF/UHF column later in this magazine.

National ALARA Meet 2008

Joy Batchler (formerly VK7YL), who was the first woman amateur in VK7, opened the ALARA Meet with a video greeting to all attendees.

Joy recorded the greeting on her 93rd birthday before flying off to Queensland for a birthday celebration. On ya Joy! I am sure there will be more in the ALARA reports in a future *AR*.

Joy aged 21 in her 1936 shack.

continued on page 36

Over to you

Dear Editor

Diode RF Probe

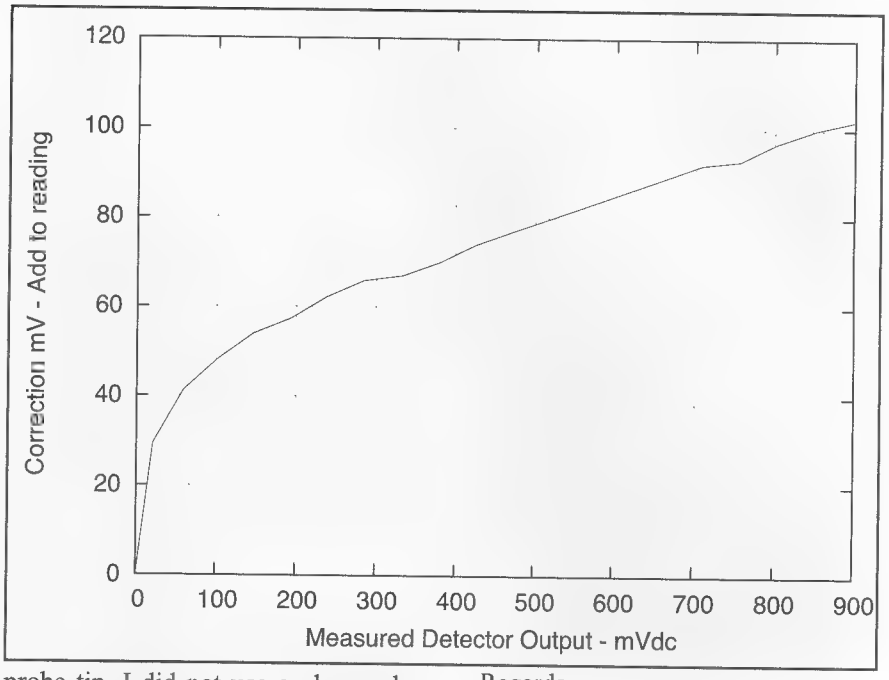
I would like to add some useful information to the Diode RF Probe article by Grant McDuling in the August 2008 issue of AR.

I built a copy of Grant's probe and calibrated it against a Rohde & Schwarz CMT-52 signal generator. The attached graph can be used to improve the accuracy of low level measurements.

Above 1 volt RMS, the probe should be "good enough for amateur work" (error less than 10%) - Just interpret the measured DC voltage as the RF RMS value (or add say about 100 to 200 mV to account for the forward voltage drop of the diode).

I also checked its frequency response. I think it is within ± 1 dB all the way up to 300 MHz. That is very impressive for such a simple circuit.

I did cheat a little - I tried to minimise the "capacitance to ground" from the probe tip. I did not use a phono plug as the probe body. Other than that, the circuit was identical.



Regards,
Phil Rice
VK3BHR

VK7 continued from page 35

Radio and Electronics Association of Southern Tasmania

REAST's September presentation was by Rex VK7MO who gave two illustrated talks, firstly on GPS Disciplined Oscillators and then on Aircraft Enhancement using the 1090 MHz Kenetic Avionics ADS-B Receiver. With the help of Jim VK3II transmitting a stable 1 kHz tone in the direction of Hobart, Rex was able to demonstrate the Doppler shift pattern and signal enhancement by a plane flying from Melbourne to Hobart. Even the Doppler zigzag was evident when the plane did its autopilot correction around Devonport for its run into Hobart. A wonderful practical demonstration of the theory, thanks Rex.

WICEN Tasmania (South)

Thanks to Roger VK7ARN for an updated Tasmanian Amateur Repeater map and a Google maps version which are now available from http://tas.wicen.org.au/index-old.htm

During the ILLW weekend the WICEN South crew activated the Cape Bruny lighthouse as VK7WCN. Three operators and two XYLs made the trip and were greeted by gale force winds. Despite the wind, a good weekend was reported. The lighthouse keeper and host for the weekend was Andy VK7WS.

Roger also reports that Tad VK2LNX and XYL Sue, who is also an amateur, will be the next caretakers on Maatsuyker Island. So, stay tuned for IOTA OC-233 becoming active.

Early Notice — Hamfest at Miena

Every two years the Central Highlands Amateur Radio Club of Tasmania (CHARCT) sponsors the major VK7 Ham Fest. This year it is at the community centre at Miena near the Great Lake in Central Tassie on Saturday the 6th of December.

The major traders are attending. The $5.00 entry fee per person or family includes a lucky door prize chance and free tea and coffee. BBQ type food will be available from 11.30 am until 1.00pm. There will also be other opportunities to win prizes. CHARCT have table space for a pre-loved equipment sale, with a white board available to advertise any other equipment for sale without the need to man a site.

A master of ceremonies will be available to advertise these items through out the day along with trader specials. Anyone requiring space should contact the coordinator and register an interest. Ample car parking is available We are seeking some volunteers to provide a small amount of time on the day to assist with the running of the event and anyone who is prepared to assist, please contact the coordinator

Dave VK7KDO on telephone (03)62730642 or mobile 0429 123080 or email: penstock@tassie.net.au

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Paul Paradigm VK2TXT
email: coordinator@amsat-vk.org

AMSAT-Australia "Worked All States" Award.

About a year and a half ago, the OZSATGROUP created a "Worked All States" award which was made available to the members of the group. I am pleased to announce that this award has been relaunched under the AMSAT-Australia banner, and we are now making the award available to our members.

The award has been established primarily to recognise the efforts of the current generation of amateur satellite operators, who have been restricted to the use of low-earth-orbiting (LEO) birds.

We see the "Worked All States" as an encouragement award for operators who regularly make contacts via amateur satellites.

Some members of AMSAT-Australia have been asking about the structure of the award requirements as set out below, and others have expressed their opinion stating that the award is too difficult to obtain.

Firstly, when we originally came up with the award requirements, we were keen to include all of the Australian callsign prefix areas with the exception of the Australian Antarctic Territory, i.e. VK1 – VK9. We understood that the inclusion of VK0 would not be practical and that VK9 contacts are rare, but not unheard of.

To make the award a little more obtainable, it was decided to create an award with a little flexibility. For those who are anxious to obtain the "Worked All States" award, and who do not want to wait for that rare VK9 satellite contact, we have provided an alternative path.

The applicant may choose to substitute a VK9 with two overseas contacts, one being with New Zealand and another with a station in any other country. Furthermore, the second country may be substituted with a contact with any manned spacecraft. Also, should a contact be made with a VK0 station in the future, this contact will also be acceptable.

It is understood that it is a little unusual to accept contacts with other countries when applied to a "Worked All States" award, however we feel that it is important to reward those who are dedicated to working amateur satellites.

For the record, the "Worked All States" has been awarded to operators in all three categories i.e. group A, B & C, see below.

I would also like to respond to the second query from our membership. I can understand that it may seem a bit difficult to obtain the "Worked All States".

However, as I have stated in the past, the key to obtaining the award is

AMSAT-Australia

National Co-ordinator:
Paul Paradigm VK2TXT,
email: coordinator@amsat-vk.org
Secretary: Judy Williams VK2TJU,
email secretary@amsat-vk.org
Website: www.amsat-vk.org

About AMSAT-Australia

AMSAT-Australia is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites.

Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-Australia is the primary point of contact for those interested in becoming involved in amateur radio satellite operations.

If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-Australia monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving.

The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news.

The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP	Maddens Plains repeater on 146.850 MHz
VK2RIS	Saddleback repeater on 146.975 MHz
VK2RBT	Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3JED	Preston, Melbourne on 144.296 MHz SSB simplex
VK3JED	Preston, Melbourne on 439.175 MHz FM simplex with a 91.5 Hz CTCSS tone.
VK3RTL	Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-Australia HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-Australia, details are available on the web site. Membership is free and you will be made very welcome.

patience. Unlike some other awards, putting in hour-after-hour behind the microphone over a set period of time s not going to get you this one.

What is required is dedication to working the birds on a regular basis and keeping in touch with other operators. A number of operators have obtained the award by arranging skeds with members of AMSAT-Australia who have travelled to islands in VK9 and in the Pacific.

Frankly, if awards are made too easy to obtain, they become a bit pointless.

If you wish to apply for the AMSAT-Australia "Worked All State" award, you need to be a current member of AMSAT-Australia, and to email us with details of your contacts – Callsign, time, date and the satellite used to make the contacts.

If you satisfy the requirement in more than one 'group', please include these contacts, and they will be noted on your award certificate.

Required contacts:

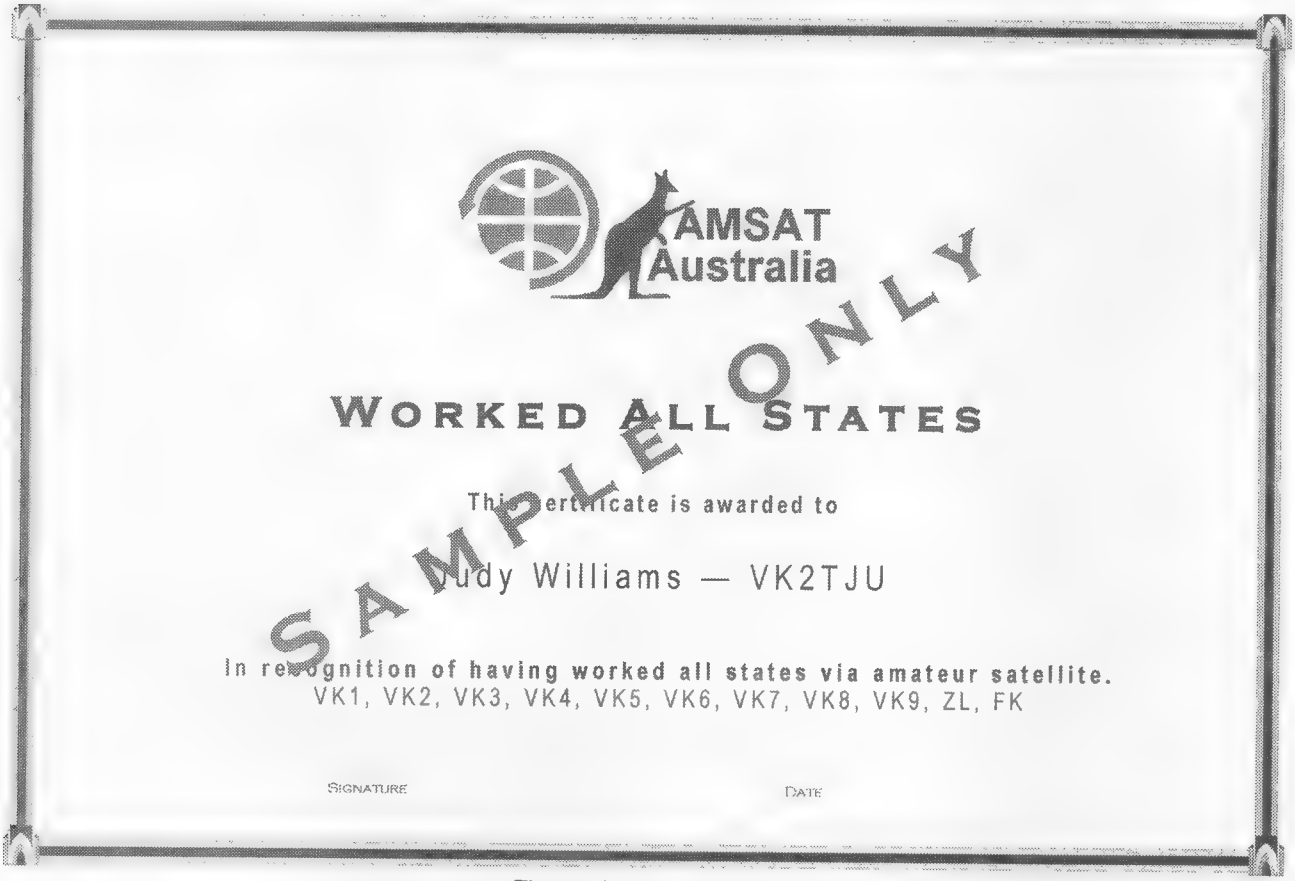
One confirmed contact with a station in: VK1, VK2, VK3, VK4, VK5, VK6, VK7 and VK8, plus one of the groups as below;

Group A – a VK9 or a VK0 confirmed contact.

Group B – a confirmed contact with a ZL and a station in one other country.

Group C – a ZL and a direct confirmed contact with any manned spacecraft e.g. an ISS crew member, space shuttle crew member, etc.

There is no set time limit to obtain the award. Generally, contacts will be confirmed via email when necessary.



The much treasured Award

Tips from George VK2WEL

This month, I would like to share some tips sent in by one of the members of AMSAT-Australia. George – VK2WEL who is one of the regulars you will find on AO51 on most morning passes. George is an experimenter and home-brewer who has much knowledge to share – PP.

"I have been home-brewing gear since I was first licensed in 1955, as I have always been as poor as a church mouse. It has not always been possible for me to run out and buy all the latest equipment off the shelf.

Things have changed a lot since the time from when we converted disposals gear through to working with Surface Mount devices today. I would like to list a few sources of information which may be old hat to some, but may not be known to others. These titbits have helped me and may be useful to newcomers.

Surface Mount Devices

Building gear with Surface Mount Devices (SMDs) seems to put fear into the minds of some people. However, I have found that by doing a little reading, and learning some basic techniques with hand tools, working with SMD components is achievable by most electronics enthusiasts. There is a plethora of information about working with SMD components available on the internet, and I would encourage home-

brewers to become familiar with this technology, as I believe that it is the way of the future. This is particularly true when building devices which operate at the frequencies required for satellite and space based communications.

One of the most useful pages I have discovered is: http://www.talkingelectronics.com This website shows the various sizes and types of resistors and capacitors etc. and covers in detail how to solder them.

Antenna Design

The "VK5DJ Yagi Calculator" by John Drew is a brilliant program. You simply decide on a frequency for your antenna, the number of elements and the materials you plan to use to build your aerial from and then press the "calculate" button. In next to no time, the programme displays all the dimensions for the various elements, as well as details on building baluns and folded dipoles.

I have found that if you stick closely to the dimensions generated by this package, the SWR of your creation will be close to zero. The software can be found at http://vk5dj.mountgambier.org/Yagi/Yagi.html

Antenna Analyser

I refer you to the July 2006 issue of Amateur Radio and to the article by Jim Tregallis VK5JST for the design for constructing VHF and UHF Antenna analysers. The VHF unit uses standard components and the UHF model SMD components. The UHF model is suitable for working with frequencies of up to 500 MHz. I have built one of the UHF models and have learned a lot about antennas just by using one of these units.

Preamps

In recent months, I have been asked about various preamps for satellite operations. Here are a number of sources which provide information about Preamps.

Filip Zalioin in the June 2008 issue of Amateur Radio details a state of the art device using a pHEMT ATF54143 device. Note the use of surface mount inductors here. While this design looks interesting, I am yet to build one for myself.

I have however, built two Preamps using ATF54143s from kits sourced from David Bowman GOMRF: see http://www.g0mrf.com/ They work very well. They cover 432 to 1296 MHz.

MiniKits in South Australia (http://www.minikits.com.au/), which is run by Mark VK5EME, supply a very well designed kit using standard components and bypass relays.

One very important thing to remember is that when you are using the same antenna for transmitting and receiving, it is essential to use bypass relays. When switching from transmit to receive and back it is also important to include a relay delay mechanism, so that RF does not get into sensitive receiver chips or relays.

MiniKits also sell an excellent kit for this purpose which I have constructed. Thankfully, I am no longer burning out ATF54143s!

Another site worth looking at is http://www.w6pql.com which is operated by Jim Klittzing who markets a kit for US$20, which will switch four events.

Station Control

I use the SatPC32 Windows satellite tracking and station control software package to drive my radios and antennas. I built a FODTRACK interface from a circuit supplied by Graham VK5AGR. At the time I built this device, there were no PCB layouts available, so I built it on Veroboard. This tracker has been working faultlessly for years and is another good example of building it yourself when you are on a tight budget.

For more information on Fodtrack see http://ludens.cl/Electron/fodtrack/fodtrack.html The software and circuit diagram is also available for download in the files section on the AMSAT-VK Group site http://group.amsat-vk.org/

You should be aware that Fodtrack communicates with the PC via the parallel printer port. This may be a problem as most modern laptops/notebooks and many PCs do not have one!

For Doppler control via CAT on my Icom IC-821H, I use a four transistor device designed by Nigel Thompson KG7SG which was published in the July 1992 issue of QST magazine. The circuit diagram can also be found on page 14 of the Ham Radio Deluxe Interfacing Manual (http://www.ham-radio.ch/doc/Interfaces.pdf) No external power is required as it is powered by the serial port. Again, like parallel ports, RS232 serial ports may be missing on modern computer systems.

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George Adams VK2WEL"

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Geoff VK2ZAZ working SO-50 using his home brew "IOIO" satellite antenna. Photo by Paul Paradigm VK2TXT.

Constructing a 50 W 23 cm power amplifier

Chas Gnaccarini VK3PY

This article describes the construction of an RF power amplifier for the 1296 MHz band. Using a combined pair of Mitsubishi RA18H1213G modules, it can deliver a linear output of over 50 watts and in excess of 60 watts at saturation.

Introduction

Some years ago I constructed a Minikits[1] 1296 MHz transverter. Its power amplifier was the then newly introduced Mitsubishi RA18H1213G MOSFET power module. Mitsubishi rates this module at 18 W output from a 12.5 V DC supply.

To my surprise and delight, the power module easily exceeded its published specifications for gain, output power and efficiency when operating from a 14 V supply. It reliably delivered 25 W and could be driven beyond 30 W.

More recently I got to thinking about higher power on 1296 MHz. One possibility was to combine two of these modules to give twice the RF output.

This is not a new idea. Several such designs exist for the superseded M57762 bipolar transistor power module. Down East Microwave[2] in the USA produces versions with two and four combined RA18H1213G modules claiming 60 W and 120 W output respectively. So the concept was clearly viable.

Combining RF power devices

Combining RF power devices presents several challenges which need to be confronted if the result is going to be an efficient, stable and reliable unit. Ideally, all the following criteria should be met:

a. The RF drive power must be equally distributed to each device.

b. The amplified output of each device must be combined in phase at the output.

c. The combination should present a 50 Ω impedance at its input and be matched to 50 Ω at its output.

d. Little or no power should be lost in the combining networks. This is most important at the output where the power is high and losses cannot be recovered.

e. Each amplifying device should be "isolated" from the other(s) at both input and output. That is, each device should operate entirely independently of the others without inter-acting with them.

Photo 1: Trial assembly of the circuit board on its mounting base.

Photo 2: The printed circuit board and heat spreader in preparation for assembly.

f. All the above conditions must be maintained over the entire operating bandwidth.

It seems a daunting task, but at these frequencies we have several options for combining RF power devices. Two common techniques are the quadrature hybrid and the Wilkinson combiner, either of which can be implemented in transmission line form. Both approaches can be made to satisfy all the criteria set out above.

An alternative technique is to simply connect the amplifier inputs and outputs, respectively, in parallel, and transform the resulting nominal 25 Ω impedances to 50 Ω with quarter-wave transformers. This would meet all the criteria except (e). As such, it is a less than ideal approach in that it may invite instability where high-gain amplifying devices are used.

The wavelength, 23 cm, is such that printed-circuit "microstrip" transmission line techniques can be readily employed. The velocity factor of microstrip transmission lines on 1.6 mm (1/16th inch) G10 or FR4 epoxy-fibreglass circuit board is of the order of 0.55. Thus a quarter-wave transformer is only about 30 mm long. The printed circuit approach has the major advantages of reproducibility and simplicity of construction, obviating the need for precisely cutting and terminating miniature transmission lines.

In the end, my choice of combining techniques was to a large extent dictated by the space available for housing the amplifier. I really wanted an amplifier that

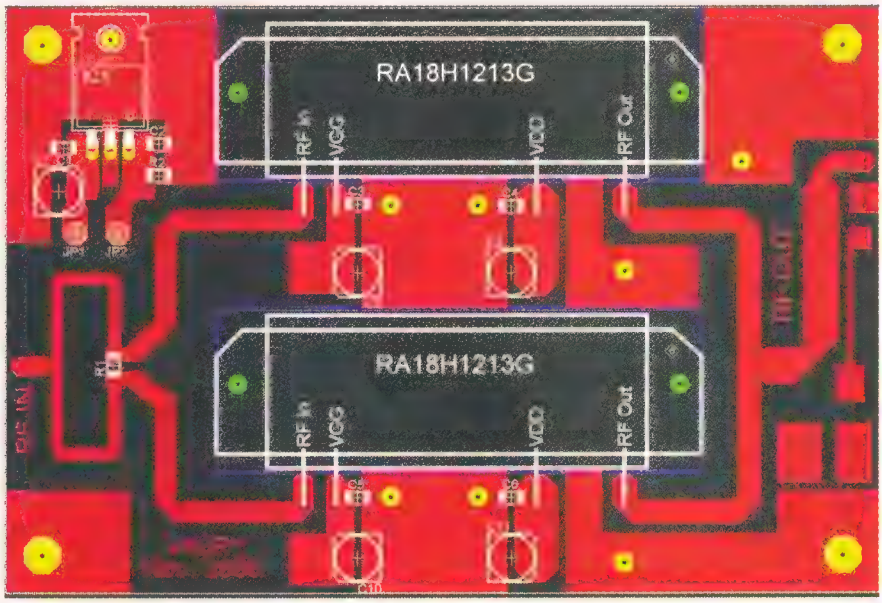

Figure 4: Circuit board and component layout diagram.

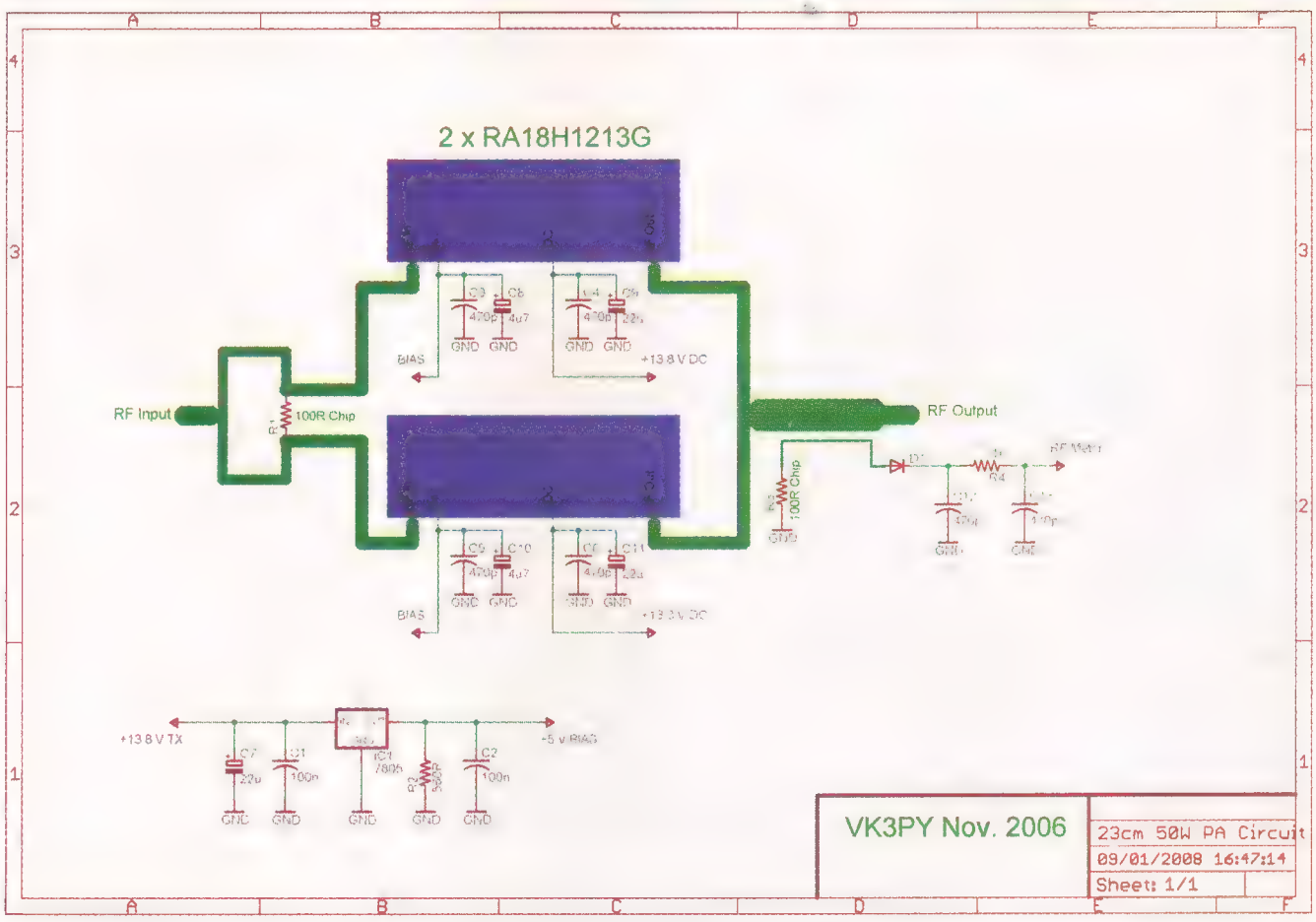

Figure 3: Circuit diagram of the amplifier.

could be retrofitted into my transverter in place of its existing single-module unit.

I had a maximum width constraint of 165 mm which had to include the SMA RF connectors and UT-141 coax radius bends. This meant that printed-circuit quadrature hybrids were out of the question due to the circuit board area they occupy[3].

A Wilkinson hybrid could be used at the input, but as its 70 Ω tracks are only 1.6 mm wide in printed-circuit form, I felt they might be somewhat marginal for the power at the output.

As an experiment, I decided to compromise by using a Wilkinson power divider at the input and just parallel the module outputs with equal-length lines to maintain an in-phase condition. A microstrip quarter-wave transformer would be used to transform the resulting 25 Ω impedance to 50 Ω[4]. At least the inputs would be isolated from each other.

The result was an immediate, resounding success. The amplifier was completely stable and delivered well over 60 W at saturation, limited somewhat by the supply voltage drop in the DC power cable (14 V at idle, dropping to 13.2 V at 60 W). It is very linear to 50 W, reaching its 1-dB compression point at 56 W output, again somewhat compromised by power supply voltage sag in my tests.

Description

The prototype amplifier is constructed on a printed circuit board measuring 120 mm X 80 mm, mounted flush onto a 6 mm thick aluminium base of the same dimensions which is in turn fixed to a heat sink. Alternatively, the amplifier could be built directly onto a heat sink.

Somewhat counter-intuitively, the board is of single-sided construction, the earth back-plane being provided by the mounting base. Careful thought has been given to the positioning of the mounting screws to ensure good earthing of the top side earth areas so the by-pass capacitors provide a low-impedance path back to the power module mounting flange. This is critical for stability.

DC power, bias and RF output metering voltages are brought through 500 pF feed-thru capacitors penetrating the enclosure. The SMA RF in/out sockets are mounted so their centre spigots enter directly through the enclosure walls onto the circuit board at the appropriate points.

The entire unit is firmly mounted onto a heat sink of adequate size. Adequate means big! My heat sink measures 170 X 115 mm with 25 mm deep fins. Even so, with combined power dissipation for the two modules exceeding 100 W at idle and rising to nearly 150 W at maximum output, a cooling fan was required for prolonged transmissions.

Construction

It is assumed that prospective constructors are thoroughly familiar with UHF/microwave construction techniques, or have access to an experienced constructor who can offer guidance.

A suitable signal source and RF power meter are absolutely essential for testing the completed amplifier.

Construction begins with the production of the printed circuit board. This has to be a high-quality product without pin-holes or rough edges on the tracks. The artwork file is in Eagle[5] format and can be downloaded from Amateur Radio section of the WIA website – see this month's issue summary.

After the circuit board has been etched, drill out the mounting screw holes including those for the power modules using a 2 mm or so diameter drill bit. Do not cut out the mounting areas for the power modules just yet. The board will be used as a template for drilling holes in the aluminium mounting base or heat sink.

Place the circuit board, copper side up, onto the mounting base (or heat sink) and

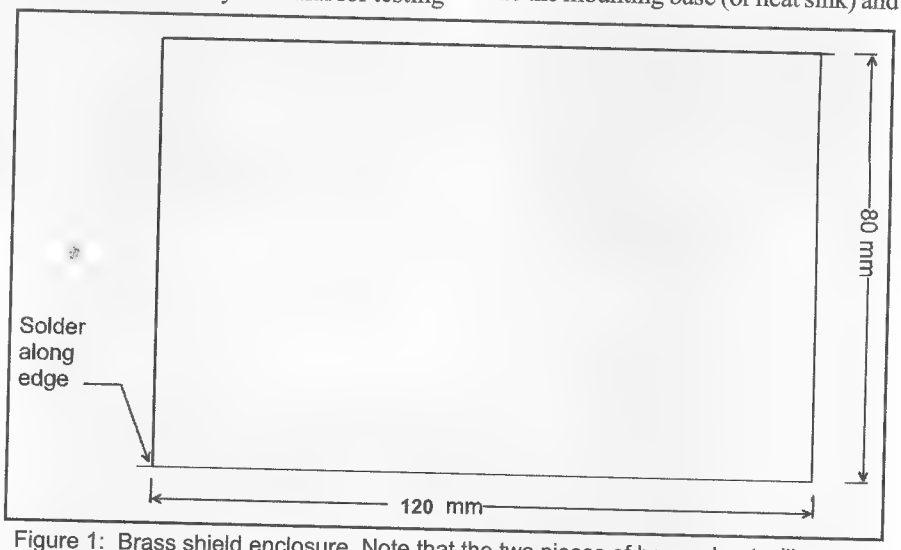

Figure 1: Brass shield enclosure. Note that the two pieces of brass sheet will need to be soldered at diagonally opposite corners.

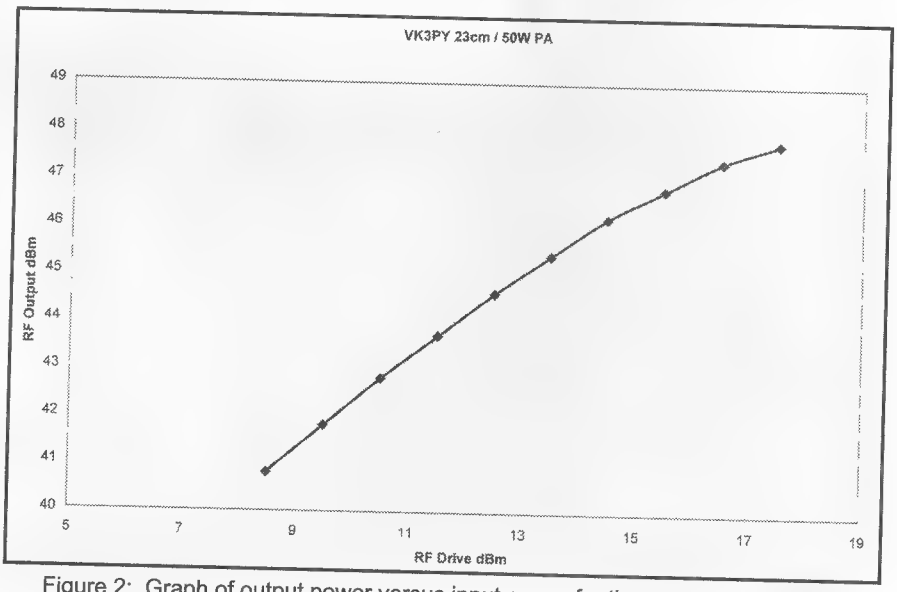

Figure 2: Graph of output power versus input power for the completed amplifier.

firmly tape it in place around it edges. Using the pilot holes in the circuit board as a guide, drill 2 mm holes into the base. Remove the circuit board, then drill out and tap all holes except the four at the corners. I used M4 screws for the power module flanges and M3 to retain the circuit board to the mounting base.

Drill out the four corner holes of the circuit board and mounting base to clear M3 screws. These four corner screws are used for mounting the completed amplifier unit onto a heat sink. De-burr all holes. Photo 1 shows a trial assembly of the circuit board on its mounting base. The location of each screw can be clearly seen.

Drill out the holes in the circuit board to a suitable clearance diameter for the screws and carefully cut out the areas where the power modules are to be mounted. Use photograph 2 as a guide to the general appearance of what you are aiming to achieve.

Using 100-grit wet and dry sandpaper laid on a flat surface, lap both sides of the aluminium mounting base to ensure it is flat. The objective is to ensure you have a very flat surface to achieve good thermal contact between the power module mounting flanges, aluminium base and heat sink.

Cut two strips of 0.5 mm brass sheet, 30 mm wide and bend them into an L-shape as per figure 1. These form the shield enclosure for the amplifier. They are retained with M3 screws drilled and tapped into the edges of the mounting base. Two screws along each edge are sufficient. The two mating corners of the enclosure are soldered along their outer edges.

Take a close look at the power module mounting flanges. They are not flat. The mounting lugs are stepped about 0.2 mm above the rest of the surface, and the surface itself is noticeably bowed inwards. It is imperative that these surfaces be ground flat. One way is to use a belt sander, grinding until the surface is a flat, even, copper appearance.

Alternatively, the surface can be carefully filed flat, then lapped on wet and dry sandpaper in the manner described for the mounting base. Either way, take care not to overheat the modules while doing this. Do not dunk them in water to cool them as they are not hermetically sealed. Instead, use a well-saturated sponge and place the module onto it to cool.

Alternate between the two modules as you work. Note too that the plastic covers will not prevent copper filings from entering the module. **I strongly recommend sealing the edges around the covers with neutral-cure silicone sealant and letting it cure before commencing the grinding operation.**

Lightly tin the areas around the circuit board's mounting holes then fit it to the mounting base and firmly screw it in place. Assemble all peripheral components according to the circuit diagram, paying particular attention to the placement of the ceramic chip by-pass capacitors at the modules' bias and drain supply connections.

These capacitors must be mounted as close to the power module as practicable and such that their earth end is close to the nearest mounting screw. ***Do not fit the power modules yet.***

Fit the brass shield to the assembly. Check that the bottom edges of the shield do not extend below the bottom surface of the mounting base. File them if necessary. Mount the feed-thru capacitors for the bias, DC supply and RF metering connections and the RF connectors.

Before proceeding further, apply + 12 V DC to the bias supply connection and measure the output voltage of the 5 V regulator. Be certain that it is + 5 V DC. If it is not, solve the problem. Failure to do so will surely destroy the power modules if the voltage is any higher.

Having satisfied yourself that the bias voltage is indeed 5 V, you can now proceed to mount the power modules. For each, smear a small quantity of thermal transfer grease on the module's mounting flange ensuring a very light, even coating over its entire surface. Place the module into its position and carefully "work" it in a circular motion to ensure that its surface mates well with that of the mounting base. Finally, screw it in place using appropriate flat washers under each screw head. ***Do not tighten these screws excessively*** as doing so may stress and crack the internal ceramic substrate, rendering the module useless. Cut the module pins to the appropriate length and solder them to the circuit board.

Wire the DC supply and bias connections between the modules and the respective feed-thru capacitors, slipping several mix-43 ferrite beads over each wire. Fit the RF connectors. If required, fit the components associated with the RF output metering. Note these are not indicated on the circuit board layout due to board size limitations imposed by the free version of the Eagle program. However, the circuit diagram should give a good idea of their placement.

This pretty much completes the assembly of the amplifier. Mount the entire assembly onto a heat sink using an even, liberal layer of thermal transfer grease between the mounting base and heat sink. Photo 3 shows the completed amplifier mounted on its heat sink ready for testing.

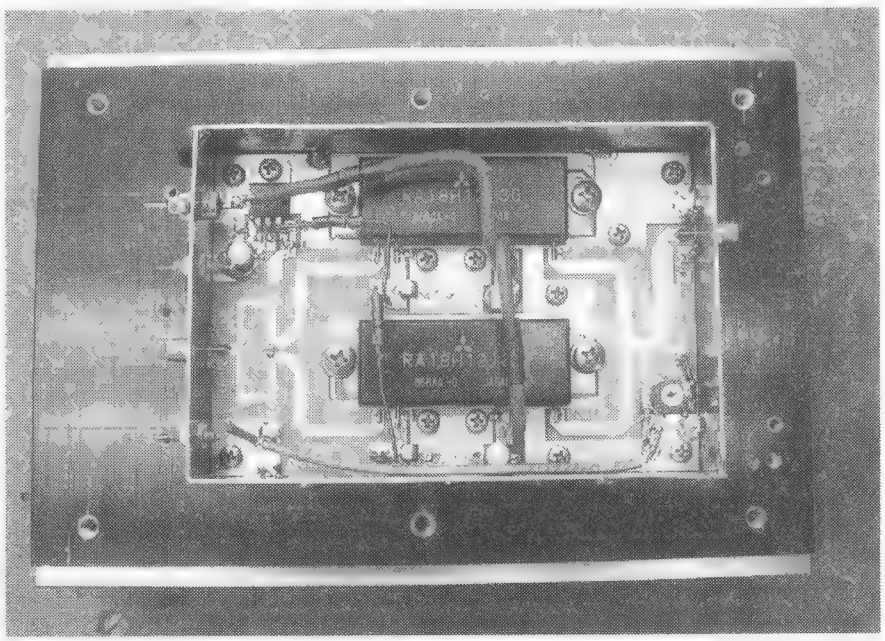

Photo 3: The completed amplifier mounted on its heat sink ready for testing.

Testing

Terminate the amplifier's output into a suitably rated (for power and frequency) RF power meter and dummy load.

Begin by applying 13.8 V DC to the supply voltage connection. The power supply must be capable of delivering in excess of 14 amps. Use a short power cable rated for this current, with a 20 A fuse, and place an ammeter in series. The amplifier should be drawing negligible current at this stage.

Apply 13.8 V DC to the bias input connection and note the idling current. It should be of the order of 7 amps. The power meter should indicate no RF output. Any sign of RF output is an indication of instability and should be checked out (none of the four units constructed to date have misbehaved). If all is in order, disconnect the bias and remove the ammeter from the DC supply line.

Re-connect DC power and bias. Apply a low level (+10 dBm or so) of RF drive and verify you have around 17 W output. While monitoring the output power, increase the drive and verify that you can achieve 50-60 watts. Use the graph of figure 2 as a guide to the drive power requirements.

This completes construction of the amplifier.

My thanks are extended to David VK3QM, Barry VK3BJM and Charlie VK3NX who each constructed copies of this amplifier to verify its reproducibility.

The photographs used in this article were taken by Barry Miller VK3BJM.

Notes

(1) Minikits http://www.minikits.com.au

(2) Down East Microwave http://www.downeastmicrowave.com/

(3) For an example of a 1296 MHz combined module PA using quadrature hybrids see http://www.g3wdg.free-online.co.uk/35wpa.htm

(4) There is some speculation that the output impedance of the RA18H1213G power modules is lower than 50 Ω at high output levels. For this reason the output microstrip lines have been made closer to 40 Ω.

See http://downeastmicrowave.com/PDF/MOSFET%20PA_pdf.PDF

(5) The free version of the Eagle printed circuit board editor may be downloaded from: http://www.cadsoftusa.com/

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Parts list:

Most components are available from Minikits: http://www.minikits.com.au

Resistors

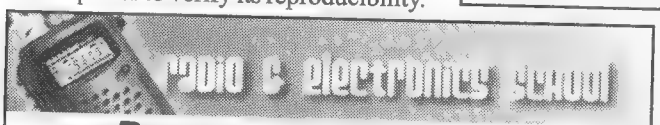
R1, R3	100 Ω SMD 1206 or 0805 size
R2	560 Ω SMD 1206 size or ¼ W leaded
R4	1 kΩ SMD 1206 or 0805 size

Capacitors

C1, C2	100 nF either SMD or disc ceramic
C3, C4, C5, C6, C12, C13	470 pF SMD ceramic 0805 size
C7, C8, C9,C10, C11	22 µF Electrolytic, SMD or leaded
500 pF feed-thru capacitors, 3 required	

Miscellaneous

IC1	7805 or 78L05 regulator
D1	1N4148 or similar
RF Modules	2 x Mitsubishi RA18H1213G
SMA Coaxial sockets, 2 required	
mix-43 ferrite beads, 12 required	



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Spotlight on SWling

Robin Harwood VK7RH

What a difference a month can make. The Olympics were overshadowed by a major political crisis and then came the hurricanes in the Caribbean. The airwaves reflected the activity.

The trouble erupted in Georgia when their troops tried to re-assert their authority in two breakaway provinces of South Ossetia and Abkazia.

This naturally provoked an immediate response from the more powerful Russian military machine and they quickly drove the Georgians out of the two provinces and captured a large chunk of Georgian territory.

Abkazia and South Ossetia were quickly "recognised" as independent republics by Moscow and the European Union negotiated a cease-fire. But the more powerful Russian military were extremely reluctant to completely withdraw and their continued aim is to politically destabilise Georgia.

This caused a rapid deterioration in relations between Russia and both the European Union and the United States.

The plug was finally pulled on domestic relays of Radio Free Europe and consequently shortwave was again utilised to get RFE programming into both Russia and Georgia.

There was also a major programming escalation of the output of the Voice of Russia to all target areas. America was vilified as the instigators of the crisis and Russia naturally restated that Georgia was within their sphere of influence.

Both parties also suspended cooperation in NATO. A major military exercise between Russia and NATO was also cancelled with NATO told to stay out of the region by Russia.

The Internet was also a battleground with repeated Denial of Service attacks on Georgian and Ukrainian websites from Russia. The domestic Radio Rossi network, which services Russia and the various CIS republics, was hastily moved off AM and shortwave to FM and given a name change.

This crisis has caused a major re-assessment of strategies and political alignments.

You can be sure that shortwave has not taken a backseat and incidentally this international crisis came just a few days after the VOA decided to axe Russian and Georgian broadcasts off shortwave. RFE/RL has taken over most of the channels previously occupied by the VOA and there has been an increase in output to cope with this crisis.

Utility monitors have for some time been reporting Georgian forces using the ALE protocol over HF but since the routing of Georgian troops by the Russians, these ALE networks have disappeared.

Shortwave has been busy with HF communications taking a major role with the aftermath of hurricanes in the Caribbean Sea.

Three hurricanes came in rapid succession and the various HF nets swung into immediate action before any of them made landfall. One channel to monitor over the next six weeks is 14300 kHz, which is designated for hurricane related traffic.

I also have received advance notice that Radio St Helena will be making another broadcast from this windswept Atlantic island. It will be on November 16th between 2000 and 2300 which is very early Sunday morning locally. The broadcast will be on their regular channel of 11092.5 and on USB.

I do not hold out much hope of hearing it direct, judging by past experience, expecting that it will be more easily observed from one of the remote website receivers.

Do not forget that the month of October is when the clocks go back or ahead, depending upon in which hemisphere you are located. New Zealand will be the first to put their clocks ahead on 28th of September whilst NSW, Victoria, Tasmania the ACT and South Australia will do this on October 6th.

WA has been on trial with one year to go whether DST will be a permanent summer fixture. WA introduces DST on October 26th.

This day is also the commonly agreed date when most International broadcasters alter their frequencies to take account of propagation when the Northern Hemisphere goes off DST. North America reverts to Standard Time on the first Sunday in November. Confused? Why do they not all agree to make these changes on a common date and avoid weeks of confusion?

Well that is all for this month. Do not forget you can e-mail me your news or comments to vk7rh@wia.org.au

Robin L. Harwood VK7RH

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for an application form.

DX - News & views

John Bazley VK4OQ
P.O. Box 7665, Toowoomba Mail Centre, QLD 4352. E-Mail: john.bazley@bigpond.com

With an increase (hopefully) in band conditions just around the corner, the following announcement should increase activity on digital and CW modes.

The ARRL Board of Directors, at a meeting held 18th to 19th July 2008, voted to create a new "Triple Play Award" for Worked All States on voice, CW, and digital modes, 150 QSQs, the confirmations done exclusively on Logbook of the World, LoTW. QSOs must be made after January 1st, 2009.

More from the ARRL minutes:

"The Board also acted on the Programs and Services Committee report, voting to eliminate Rule 5 from Section III of the DXCC Rules. The Committee realized that while publishing log data can have a detrimental effect on operating awards, it was not possible to control such actions and the rule cannot be enforced. As part of an effort to maintain the integrity of operating awards programs, the Board called on staff to create resources and guidelines for QSLing and for QSL managers. These guidelines will help people who QSL to understand the "best practices" and help to support the work of the QSL manager so that access to log data won't degrade Amateur Radio's long tradition of the "honour system."

Another item of 'Administrative news'. E73Y reports that after more than four months reviewing the applications, effective 1st September 2008, Bosnia and Herzegovina Communications Regulatory Agency has granted 54 one-letter suffix licences for Radio Amateurs in Bosnia and Herzegovina, That is 46.96% of the total number of applications received (115). A complete list of the issued callsigns is available at the BH CRA WEB Page (unfortunately English version is not yet updated): http://www.rak.ba/hr/freq-mgmt/msword/OdlukaE7naRadiamateriHr.doc.

QSL manager Ralph K2PF is now handling QSL work for E70A and E73U.

So what have we to look forward to in the coming weeks?

Possible activity from Glorioso Islands? There also seems to be a problem with the promised activity from Marion Island ZS8. Up to now I understand that there has only been one QSO, but they are on the island for a few more months so it is a question of 'wait and see' for both operations!

A group from the South Texas DX and Contest Club (STXDXCC), including Jay K0BCN (V31MX), and Tom AB5XZ, plan to operate the CQ World Wide SSB DX Contest (October 25/26) from Cay Caulker (NA-073), Belize. They will fly to V3 on October 22nd. This will be a multi-single. They will most likely use V31MX in the test and will have other V31 calls. They will leave on October 29th. QSL V31MX via K0BCN.

Nicolas F8FQX (ex 5T5SN) has been in Congo since August 20th. He will be there for the next 3-4 years and is working on getting his TN ticket.

Mike KM9D and Jan KF4TUG are stuck on Ndende Island, Temotu Province (H40), due to "an enormous (1040 mb) high pressure system NE of New Zealand", reports Paul A35RK. The two expect to sail to Vanikolo (OC-163) where they will operate as H40MY.

OH0I is the Aland Islands callsign for OH9MM, single operator single band 10 metres in the CQWW CW November 29-30. QSL via OH3BHL.

Massimo IW0HEU is now in Kosovo until January 2009. He has been QRV as YU8/IW0HEU on 40 metres SSB. Look for him to be QRV during his afternoons. Suggested frequencies are: 7050, 7080, 7085, 14280, 14290, 14295, 18150, 21200 and 21250. QSL via IW0HEU either direct or via the bureau.

PJ2/PA0VDV will be on from Curacao October 2-29, CW only.

TC3EC in Turkey, operators TA3YE and TA3GO, will be on for the CQWW SSB Contest October 25-26. They will be multi-op all band. QSL to TA3GO.

J3/DM2AYO and J3/DL7CM, Sid and Hans, will be on from Grenada (IOTA NA-024) November 6-25. They are renting a nice QTH near Sauteurs on the north end of the island. They will operate on 160-6 m CW, SSB, RTTY and PSK with a pair of IC-706 rigs to 700 watt amps, with a Yagi for high bands and a ground plane for low bands. QSL via their home calls.

Paul K1XM plans to do the CQWW, both modes, from French St. Martin, single operator all bands on SSB and CW multi-two or multi-single with WA1S and KQ1F. He may go in the "assisted" category on the SSB weekend if the Internet connection works well. The callsigns for both will probably be TO4X. QSL via KQ1F.

David EB7DX updates us on the December 2008 IOTA 6 day DXpedition to Bangladesh's St. Martin's Island (AS-127). Tutul S21RC and Manju S21AM will be just two of the operators. A Web site has been set up at http://s2iota.eb7dx.com/ There will be a log search after the DXpedition. The callsign will be announced later. QSL via EB7DX, David Lianez Fernandez, P.O. Box 163, 21080 Huelva, SPAIN. Logs will be mailed to LOTW one year post-operation.

From October 20th DK3TNA, Stephan, will be QRV from Fuerteventura Island, Canary Islands (AF-004). He will be on 3.5 to 28 MHz on CW and SSB running 100 watts and a dipole until November 3rd. QSL via DK3TNA either direct or via the DARC QSL Bureau.

Look for Ulf DL5AXX to be operating from Grenada as J3/DL5AXX November 25th to December 9th, including the CQ World Wide CW DX and ARRL 160 Meter CW Contests. QSL via DL5AXX.

Following my comment on QSLs from VK9WWI, I was pleased to receive this note from Bill VK2MWG:

"Have just read your article in AR and wish to add that I have received a card direct from VK9WWI and give you a list of DX that I have been lucky enough to have worked mobile, with a FT-857D and a home-brew 3 metre whip.

April: DU9/G4UNL, VE7AV, SP75N, P29GQ, JR1BLX, W4DOM, H44MS, H44MD, T20HC, KH7DX, YB4IR, ZS6B, 9A9A all on 20 m. YC2IQ, XU7ADV, YB1ALL, YB8OUN/9, on 15 m.

May: ZK2PM, ZS1ARC/4, RW0CD, JH4IQZ, K6MYC, 3D2A, K6OKW, 9J2BO, FK8FB, VE6PR, all on 20 m, KQ6PK on 10 m.

June: 4W6R, KK5NC, KI6FFB, VA6UK, VE7YY, W0GLG, HP3EFS, 5W0JM, VE6AO, WN7M, XE2GAG, K6MCL, V63WWA, all on 20 m,

Christine Taylor VK5CTY

The contest

Well, conditions were good this year. It was especially good on 80 metres on Saturday. There was a bit more interference on Sunday night but everything was better this year than it has been some other years.

Thank you to all the OMs who participated and thank you for staying around to make several contacts during the two evenings and the daylight hours.

From the scores heard on Sunday night, some of our members had been very busy. We look forward to seeing the results published.

Unfortunately I had other engagements so I could only join in at night, but I certainly finished up with a satisfactory score and I think I worked all states as well as a couple of ZL YLs.

If you also worked a number of different states remember that you can apply for an ALARA Award with 10 YL contacts from at least four states. Look at some of the earlier ALARA columns for the full details.

I do hope you sent in your log, because by the time you read this it will be too late. The logs had to be in by the end of September.

International YL Meet

There will be an amateur station at the International YL meet in South Africa The station will be ZS08YL. It could be heard from several locations as the YLs move around the country or it may be at a fixed location.

At the time of publication there is no information about times or frequencies. If these become available, they will be passed on to you, possibly through the WIA Sunday broadcast. Please listen out for us and give us a call.

JOTA is on this month

If you participated in JOTA with your local scout group, let me know so I can let everyone know. Send me a story and photos and see them published in AR.

There are many more YLs 'doing their bit' for the Scouts and Guides than we ever hear about. Please change that. Let me know so I can let you know.

Early YL Amateurs

The history project ALARA has undertaken over a number of years has been mentioned before but we were thrilled recently when Justin VK7TW (a regular reporter in this magazine) had an interview with one of these early YLs.

Joy VK7YL is now in her mid 90s, but was happy to talk to Justin for about 45 minutes. The people attending the ALARAMEET may see part of this interview. Joy got her licence in 1936 and, unlike some of the early amateurs, took it up again after the War.

It will be interesting to hear what she has to say.

If you have any memorabilia of an early YL, we would love to add it to our collection. We are also interested in hearing from current amateurs who might tell us why they went for their licence, or of an interesting experience they have had through amateur radio.

Please send any material to me VK5CTY, QTHR in the callbook.

The Alarameet

There will be a report of the ALARAMEET in next month's AR. Everything is under control and many travellers are on the road as this column is being written.

Sponsorships

Almost from our earliest days YLs in ALARA have sponsored YLs in other countries. It is another way of extending the hand of friendship across the world. Sometimes it is someone we have met; sometimes it is someone we have spoken to on air, but often the YL we sponsor is offered to us by our Sponsorship Secretary.

Whoever takes on this position in ALARA usually is a regular operator on the DX bands or has, herself, enjoyed the experience of sponsoring someone. Currently our Sponsorship Secretary is Maria VK5BMT, QTHR in the callbook.

If any YL is interested in being a sponsor, contact Maria and ask if there is anyone looking for a sponsor. Sometimes we exchange regular letters (or emails), sometimes we only exchange Christmas cards, with others we arrange a sked on radio or even on EchoLink. How deeply we become involved is up to us.

I have been lucky enough to meet some of my sponsors when I have been overseas; other people have had their sponsors visit them in Australia.

It is usual but not always applicable that the YL we sponsor, in return sponsors us. We pay a sponsorship fee to join each other into our YL organisation and then we receive newsletters from each other. We get to know what is happening around the world in amateur radio circles.

Talk to some of the sponsored YLs to hear about their experience.

73 de VK5CTY Christine

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continued from page 46

KL7IYD and KI6KFB on 40 m.

July: W1NDY, FK8HW, KE5WZ, K2MLB, WD8CQB, N8QS, KH6KW, AD4GB, KI6WE, KF8UV, all on 20 m.

August: KC3RIV, WA4YDO, AD1L, K3MJW/250, KI0Z, N9N, on 20 and WA4YDO on 40 m.

Since installing the mobile rig in July 2007, I have worked 116 DXCC Countries, with 70+ confirmed so far."

Great Bill – look forward to hear what you work when conditions improve!

So until next month, 'Happy DXing'.

Special thanks to the authors of *The Daily DX (W3UR), 425 DX News (I1JQJ) and QRZ.DX* for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two week trial of The Daily DX from www.dailydx.com/order.htm

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VHF/UHF – An Expanding World

David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

Reunion to South Africa Contact

Many people have speculated about the possibility of a 2 m contact between VK6 and the islands in the Indian Ocean, far to the west. While it is a large distance to cross, the Hepburn Tropo Propagation Forecast page for that area often shows large areas of significant enhancement during the summer months.

Recently, a milestone contact was achieved across that part of the Indian Ocean, in our direction from Africa. On August 14th, FR5DN (Reunion) successfully worked ZS2GK (South Africa) on 2 m SSB. This was the first FR-ZS 2 m QSO, and possibly the longest 2 m tropo QSO for either country. Full details may be found at:

http://www.astrorun.com/~fr5dn/radio/tropo/14aout2008/zs2gk_14august2008.html

A critical success factor was Phil FR5DN's use of his home station as a beacon, pointing towards South Africa. His station is a Kenwood TR-9000 and 160 watt amplifier into a 17-el long Yagi.

Early on August 14th, Glenn ZS2GK reported hearing the FR5DN beacon from Reunion Island. At 0339 SAST, he established a two-way contact with Phil FR5DN on 144.2 MHz SSB and also on 144.4 MHz FM. Reports were S5/6 with no QSB over the VHF path of 2875 km. ZS2GK was running 400 W into 4 x 9 el Yagis.

This contact has stirred interest in the area, with other stations planning to establish informal beacons. Unfortunately, most of the population of Reunion is on the west coast, with mountains to the east, so an FR-VK contact may be very unlikely.

144.150 Net Revival

The popular VK3 "150" Net has been running for a number of years. Recently Robbie VK3EK, who has been Net controller for all that time, has been tied down with other commitments. So, Mike VK3AAK and Rob VK3ESE have stepped forward with an offer to take over the Net as joint controllers.

On their first night of operation – September 10th – they report having 20 stations from all over the state, and interstate, call in including VK3FELA (Doncaster), VK3NJP (Geelong), VK5LA (Berri SA), VK3AXH (Ballarat), VK3KQB (Wendoree), VK3NPA (Geelong), VK3IDL (Ballarat), VK3LM (Koorumburra), VK3HV (Morwell), VK3DMW (Yarrum), VK3ACC (Cobram), VK5DK (Mt Gambier), VK3FMCQ (Morwell), VK3GND (Dereel), VK3MCW (Colac), VK3NCR (Somerville), VK3ART (Heathmont), VK3TPR (Glen Waverley), VK3ESE (Mt Dandenong) and VK3AAK (Mt Eliza).

Their second night also yielded 20 stations, including VK2KRR (The Rock) and VK2YB.

If you are looking for some activity on Wednesday nights in the country's south-east, tune to 144.150 at 8:30 pm EST.

Don VK2RS SK

There was sad news recently of the sudden passing of one of the veterans of VHF – Don VK2RS in Corryong. Don was one of the true gentlemen of the air and was a regular on the morning 2 m SSB Aircraft-Enhancement net. He had a long-term project investigating AE propagation and was constantly trying different antennas. He had meticulously recorded several thousand contacts via AE on VHF and UHF and was continuing to refine his analysis. His presentation at GippsTech several years ago showed the depth to which he had gone with his investigations. His cheery voice will be missed on the air.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur VK7MO

Dave VK2JDS has a solar powered EME station operational on 1296 MHz. He has been operational since March and has been reporting his trials and tribulations and receiving advice on the forums of the VK logger. He says "this is a great resource". Dave tells of his proudest moment: "My wife Phillipa VK2XPH came out to the radio hut and I explained the latest improvements to the system , I said "press the Morse key for 3 seconds", she did and we clearly saw the return ping from the moon on Spectran and could just hear it audibly."

Dave runs a 4.6 metre TVRO dish with an IC-910H to 65 watt amplifier from Alan VK3XPD. He balances his dish with a milk crate filled with rocks (see photo).

The VK2JDS solar powered EME station with solar panels in the background and milk crate balance mechanism.

Dave has worked G4CCH, HB9Q, SM5LE (2.2 metre dish), RD2DA, and DJ9YW all on JT65c.

118 km Non-line of sight

On 8 September Rex VK7MO and Justin VK7TW achieved one way optical communication using JT65a on a 118 km non-line of sight cloud bounce path. This almost doubled their previous best distance of 66 km. Rex trekked to Coles Bay on Tasmania's east coast and set up his Avalanche Diode receiver and Justin operated the transmitters from Rex's QTH in Hobart.

Initially, to check for propagation Justin sent a tone using a 60 x LED Luxeon array. Almost straight away it was received at 40 dB above the noise in 20 mHz bandwidth. Rex and Justin then swapped to WSJT using the JT65A mode and sent callsigns one way at a consistent signal level of -9 to -10 dB (which means there was about 18 dB to spare).

They then swapped to a small transmitter using four red and four blue Luxeons with tones spaced around 6 Hz apart so that the red and blue signals could be compared.

The red signal peaked at 20 dB above the noise but the signal was hardly evident on the blue. This result confirms theory that red light is much better than blue for optical through-the-air communications. The reason is that blue light is more readily scattered and thus lost as it propagates through the air (physicists call this extinction). This preferential scattering of blue is also the reason why the sky is blue.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

The Magic Band – 6 m DX

Brian Cleland VK5BC

Firstly I apologise for the lack of notes in the last 3 months but I was travelling in northern Western Australia, in particular the Kimberley, Pilbara and gold mining areas.

From the little information I received as well as watching the logger there seems to have been very little 6 m activity during this period with only a few minor openings from northern Queensland to VK2 and 3.

In summary our WA trip included the Kununarra/Wyndham areas, Kimberley via the Gibb River road, Mitchell Plateau (magnificent waterfalls), Derby, Broome, Pilbara area including Karratha, Dampier, Millstream and Karijini national parks and finally through the gold mining areas of Meekathara, Sandstone, Leanora and Kalgoorlie.

After Kalgoorlie, it was the long drive home across the Nullarbor where we stopped off to see the whales at the head of the Bight. In total we covered about 12,000 km and used about 2,500 litres of petrol which averaged $1.73/litre, the most we paid being $2.29/litre at Mt Barnett in the Kimberley.

Whilst travelling WA I could operate all bands from 80 m to 70 cm and I did monitor 6 m from time to time as well as keeping an ear on 10 m for any activity which may have indicated some 6 m openings.

I only once heard anything on 6 m whilst on Cable Beach in Broome. This was on the 26th July when I heard the Alice Springs VK8RAS and Darwin VK8VF beacons both up to S9, but despite several calls no contacts were made or stations heard.

I did find operating on the HF bands somewhat different from down south, could hear very few VK signals but signals from Asia/Malaysia were very strong, particularly on 80 m, 40 m and 20 m and I did manage a few contacts into the 9M Malaysian areas on 10 m. For skeds back to VK5, I found 30 m good in the morning and 20 m in the afternoons.

I only had one VHF contact on 2 m whilst travelling WA which was via the VK6RWR Wickham repeater which unfortunately was the only active repeater I could access throughout the trip - even the Kalgoorlie 2 m repeater is not operational.

I happened to be in Kalgoorlie during the RD contest weekend and whilst listening on 20 m on the Sunday morning heard a regular Kalgoorlie 6 m operator in Noel VK6ZAK.

Gave Noel a call and he came and met me at the Kalgoorlie Gold "Superpit" and then spent the remainder of the day showing us the sights of Kalgoorlie. Noel has lived in the area for over 40 years and still works at one of the gold mines in the area.

Having looked at the sights of Kalgoorlie, Noel took us to his home and showed me his station which consists of a Yaesu FT-1000 MkV with a Quadra VL-1000 amp, 6 m transverter Yaesu FTV-1000 and an Icom IC-7000 (which Noel mainly uses to monitor 6 m).

His antennas are a 4-element KLM KT34 Tri-bander, G5RV and a 6 m & 2 m 2-element quad. Noel's favourite band is 6 m and he also enjoys 20 m. The picture below shows Noel in his shack.

Hopefully we will start seeing a little more activity on the band in September/October but with the sunspot cycle still appearing to be bottoming out it will probably be the summer Es that will be the main activity.

Please send any 6 m information to Brian VK5BC at bcleland@picknowl.com.au.

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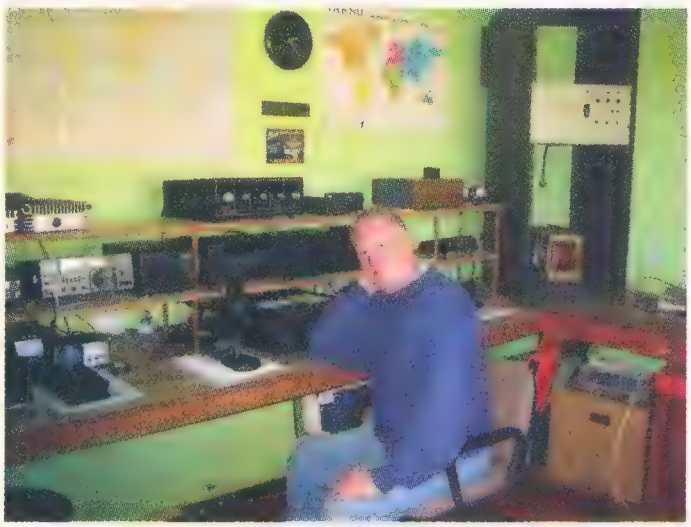

Noel in his well appointed shack at Kalgoorlie.
See larger picture on inside back cover.

Contests

Phil Smeaton VK4BAA

Contest Calendar for October 2008 – December 2008

October	4/5	Oceania DX Contest	SSB
	11/12	Oceania DX Contest	CW
	18/19	JARTS WW RTTY	RTTY
	18/19	Worked All Germany Contest	CW/SSB
	25/26	CQ WW DX Contest	SSB
	25/26	ARRL International EME Competition	CW/SSB
	25/26	CQWW SWL Challenge	SSB
November	8/9	Japan Intl. DX Contest	SSB
	8/9	Worked All Europe DX Contest	RTTY
	15/16	Spring VHF/UHF Field Day	CW/SSB/FM
	15/16	JT Ham Radio 50 Contest	CW/SSB
	22/23	ARRL International EME Contest	All
	29/30	CQWW DX Contest	CW
	29/30	CQWW SWL Challenge	CW
December	5/7	ARRL 160 m Contest	CW
	6	RTTY Melee	RTTY
	13/14	ARRL 10 Metres Contest	CW/SSB
	20	OK DX RTTY Contest	RTTY
	26 to 15 Jan 2009	Ross Hull Memorial VHF Contest (VHF/UHF)	CW/SSB/FM

Welcome to this month's Contest Column

I have recently noticed within the CW WW SSB Results of CQ Magazine that the VKCC Koalas, consisting of VK6DXI, VK3TZ, 9M2CNC and VK4EMM, were placed number six in the world with a very respectable total score of 2,368,241 points, in the Team Contesting listing. An excellent achievement Gents – very well done indeed!

Five contesters from anywhere in the world can join together to form a team, so hopefully we can assemble another VKCC team or two for 2008.

Guide to CQ WW DX Contest UBN Report

With the SSB contest results now published, the CW results will not be far behind, it is appropriate to have a think about the dreaded UBN report and what we might learn from it.

The report is to inform and assist and not be a source of criticism or derision. The CQWW DX contests are nearly on us, so it is time to review last year's approach and make adjustments to strategy for 2008 to get your score to defy those elusive sun spots. I am not expert at UBN reports – but I hear that a new format might emerge at some stage if not already – so this is intended as a general overview only and is based upon information generally available from the CQWW Contest Committee.

The UBN report is the CQ World-Wide Contest Committee's computer analysis of your submitted adjudicated contest entry. It contains an initial computer calculation of your score as well as a computer re-calculation of your score that includes the effects of the computerised log checking.

Score calculations for all submitted logs are made using the same multiplier-reference data and scoring algorithms, so that the different entry categories are measured by the same yardstick.

The report also shows QSOs found by the computer that definitely impact and those that might impact the adjudicated final score. This includes QSOs for which credit was denied (-B and -N) as well as unique (U) QSOs.

What do the codes mean?

Credit is automatically removed for QSOs that have been adjudicated either as being bad (-B), or found to be not-in-log (-N) during cross-checking with no evident receiving error found in the cross-checked log.

The computer then tries to determine if the claimed station miscopied your call. If the computer finds potential close callsigns in the other log, they will be listed as POSSIBLE CALLS.

It is possible that the copying station can make a copying error that the computer algorithms are unable to recognise. Some large logs from stations with complex callsigns often lose credit for a few 'computer unrecognisable' errors, so be careful when selecting a callsign on DXpedition!

The word 'Bad' in the report refers to an incorrectly logged callsign, not that the callsign does not exist. If a callsign is miscopied as someone else's call, this does not warrant credit.

It is worth mentioning that no credit is removed from the log because the call might be unique (U). The use of the word 'unique' means that the call only appears in your log and not in anyone else's.

This makes sense as to win the contest, you have to work more callsigns than everyone else with more multipliers and so unique callsigns are to be expected.

A 'Zeroed-out-contact' is shown as a Z in the report. This contact was removed from your log with no penalty, just as if it had never occurred. Z applies to contacts judged to be with pirates or stations using illegally assigned callsigns. Z might also be applied to "contacts" deemed to be outside the spirit of the contest.

The UBN reports are usually provided as abbreviated log-analysis reports showing only contacts for which credit has, or may be, denied. If needed, the adjudicators can produce a report showing the status of every entry in your log. This report, rarely generated, shows detailed scoring information for each contact, which contacts were actually cross-checked and the number of total claimed database QSOs made with every callsign in your log.

UBN Report Columns

The initial review of the report can be a little daunting to say the least. The report appears to be a series of titles and numbers that, without knowing what is going on, tells the reader precious little about the log under examination. The following column titles can be found within the report:

LINE = QSO number on a particular band for your log

(QSO) CODE = Status of flagged callsign (U, -B, N, -N, or Z) in your log

CALLSIGN = Flagged callsign found in your log

#-BAND-LOGS = number of times this call was worked by other stations in the adjudication database

POSSIBLE CALLS = Computer determined possible callsigns similar to the flagged callsign

#-band-logs = Number of total database entries for the possible callsign

In the report header, your callsign is shown followed by the band. Band designations for CW are 160, 80, 40, 20, 15, and 10. You could be forgiven for thinking that the band designations for SSB would be the same, but unfortunately they are not always! For SSB, band designations may be one number greater, such as 161, 81, 41, 21, 16, and 11, as these band numbers are for internal CQWW Contest Committee use.

Yet more codes

At this stage, take a deep breath and relax. The UBN report has a few more tricks up its sleeve. There are a few more codes that can sneak into your report which can tell the reader a bit more about their performance in the contest.

The 'possible calls' list can give clues to where the perceived logging error might have occurred. For (U or -B) callsigns in your log, possible calls are computer estimates of what the correct callsign might be.

For (N or -N) callsigns in your log, possible calls are calls in the other station's band-log that might be miscopied versions of your callsign. So, you can get an idea if the logging error is your hiccup, or the other operator.

Informations on the further codes is freely available on the Net. Suffice to say that the report can be a handy tool with which an informed reader can analyse their logging accuracy performance during the contest - but it can get a little bit cerebral after a while.

The summary the end of each of the band listings, shows, amid other data the number of QSO entries on that band; the number of Unique or Bad call QSOs in your band log and their percentage (U + B)/(calls).

This piece of information has generally been found to be one of the measures of accuracy for almost all logs and could be used as a yardstick with which to measure yourself, if so desired.

The summary also lists the number of QSOs that are Unique, or Bad or Not-in-Log; the number of cross-checked QSOs on that band against logs in the adjudication database; QSOs that you claimed were not found in other stations' logs and a list of lost multipliers is included for that particular band.

Penalties

Nothing to do with the footy, but a similar approach. If you are perceived as having done something wrong then there is a price to pay! It is worth closely examining the log prior to submission for adjudication. Some see this as a form of cheating, but if the QSO is valid but the operator suffered from some keyboard weary errors, then it is up to the conscience of the operator to decide if he or she wishes to check the log prior to submission. Personally, I have no problem with it and it makes sense to me to look for 'silly' or obvious errors.

For each -N or -B callsign, contact-point and multiplier credit is denied and a point penalty of 3 times the claimed contact score value is assessed. The scoring is done by first crediting the claimed point value and then removing 4 times that value. If another same-multiplier station is worked on the band, multiplier credit will automatically result from the good QSO.

The CQWW Contest Committee emphasises that the penalty system is implemented to encourage accurate operating. Improperly logged contacts adversely impact the scores of others and generate extra work for the log-checkers, so now you can see why I am keen to check my log prior to submission.

The message that I get from the Committee is, that if you are not certain of all the details and you do not want to risk losing the equivalent point tally for 3 QSOs, simply either ask for a repeat or tell the caller, "No QSO."

Do not put a guess at the call in your log, as your delight in 'working' that juicy multiplier will come home to roost as a potential penalty with a reduced score.

It is also worth mentioning that the information in some PC logging program files can sometimes not tally with the data exchanged during the contest. I have heard of some stations stating a different zone to that offered by the software, but I prefer to log whatever the station tells me during the QSO and use the software as general guidance only.

Is log checking perfect?

It would be nice if that were the case but the reality is that log-checking is neither perfect nor purported to be perfect. It is intended to be accurate enough to determine the correct order of finish in the various categories.

Where two stations are extremely close to each other as regards final score, there may be a case to examine the data even more closely so as to ensure a fair and accurate result.

I am far from being an expert in these matters, but I hope that this brief overview serves to assist when you next receive your UBN report for the CQWW series of contests coming up in the next couple of months.

RD Contest 2008

Well, the sun spots still did not come out to play – regardless of the various expert opinions, so 10 m and 15 m were tough going for the contest.

Quite a number of stations reported hearing a good level of activity from Tasmania, with Martin VK7GN and Laurie VK7ZE and John VK7WPX all making good inroads into the bands.

WA contesters were also active, including VK6ANC putting on their usual high standard from Ham Heaven just north of Perth and using the contest to try-out some new antenna hardware that the guys have been working hard to get erected for the contest season. VHF and UHF were also activated from the club station to raise the QSO tally for the weekend by around another 240.

The Northern Corridor Radio Group which operates VK6ANC has got the contesting ethic just about right. The club has competitive contesters and non-contesters, so has many hands available for getting the station going and future planning, leaving the operators to hammer the bands.

The group then make the weekend a social occasion with a BBQ and a get-together. I am sure that there are others who do much the same thing – let me know who you are and I would be grateful for any details for this column.

If you want to stay Single – forget Skimmer

The CQ WW DX Contest has recently changed its rules to say that use of the controversial program CW Skimmer will put a 'Single Operator' entry into the 'Assisted' category.

The ARRL still has not officially decided what to do on the issue for its range of contests. It will be interesting to see how this ruling is policed!

Oh, for the love of Contesting

There are very few radio hams that I have met for whom their first interest remains their primary or sole interest throughout their radio ham 'career'.

For example, I may have started by operating in contests quite some time ago, but I have also dabbled in QRP, home brewing radio equipment, RTTY, antennas and other aspects of the hobby from time to time. From a purely personal point of view, my interest in and enjoyment of these various activities ebbs and flows over the course of time. I am sure that I will be no exception in this aspect.

Some of us might have a list of call signs in our memories that are no longer seen in our contest logs. I cannot help but wonder sometimes what happened to those familiar calls.

Assuming the person is alive and well, are they still radio hams? What are they doing these days? Why did they give up on an aspect of ham radio that they do not have the passion for now? Sometimes, in addition to the perceived politics and the nuances of Radio Clubs or contest groups, it is possible to lose a contester due to 'burnout'. They focussed so intently on the competitive chase that eventually it takes its toll, wears them down and they call it a day. For them at least, it simply ceased to be fun.

This happens in all sorts of activities, of course; at work, social groups, even just groups of friends. What was once a rewarding or relaxing activity now holds one captive until escape is the only recourse. This is particularly sad in ham radio because it is somewhat unique as a hobby in that it has so many different facets to offer.

If running a radio club or contest team, for example, is getting to be a chore instead of a pleasure, then maybe it might be for the best to take a little time off to gather your thoughts and consider what you want to do before throwing in the towel or venting your spleen at others and burning bridges that you may wish to resurrect at a later date but feel unable to for historically limiting reasons.

Even within the contesting aspect of the hobby, there are plenty of opportunities to freshen up an activity that might be considered to have got a little stale. If slugging it out during an HF DX contest starts to seem too much like hard work, why not get out of the shack and do a VHF hilltop expedition or try any of the WIA VHF / UHF contests for a different slant? If you are a single-band enthusiast, then maybe try changing bands. If it all seems a little too easy after a while and the challenge no longer seems to be to the fore, then possibly try EME for a technical and operating challenge if you have the real estate!

Another approach might be to host a small multi-single operation as a refreshing change from a solitary SOAB existence. I suppose the point of this diatribe is: change modes, change bands, change whatever it takes to turn that perceived hard work back into pleasure.

Maybe, under these circumstances, it could be best to take a step back from whatever you are currently doing, reappraise things and take stock. Ham radio is a big world with lots of exciting things going on – some of which you may not have heard about. Take a possibly higher "less travelled" road and take some time to reinvigorate your appreciation for a terrific hobby and the people also enjoying it much like yourself.

But it is, after all, only a hobby.

If you have any contest related material for inclusion within the column, topics that you would like covered or even some experiences and pictures you would like to share, then please feel free to get in touch via vk4baa@wia.org.au. See you on the bands.

73 de VK4BAA Phil Smeaton.

2008 - 160 Metre VK/trans-Tasman Contests

Complete Results

Participation factor Phone:
24 ZLs and 112 VKs participated. 24/112 = 0.2143.

All ZL VK contacts points (not including prefix groups or QRP bonus points) multiplied by 0.2143.

Participation factor CW:
11 ZLs and 23 VKs participated. 11/23 = 0.4783.

All ZL VK contacts points (not including prefix groups or QRP bonus points) multiplying by 0.4783.

Category 7 (Phone)

	Call sign	Score	Contacts
1st.	VK3YXC	1421	185
2nd.	VK3FRC multi-op	1310	190
3rd.	VK3HJ	1180	185
4th.	VK2AWX multi-op	1148	191
5th.	ZL4RMF	1043	124
Eq. 6th.	VK2MA multi-op	972	176
Eq. 6th.	ZL3UR	881	115
8th.	VK2BTW multi-op	825	161
9th.	VK3IO/Qrp	797	118
10th.	ZL4AL multi-op	680	97
11th	VK2XN	502	113
12th	VK3SAT	438	84
13th	ZL1FF	431	66
14th.	ZL1AAO	403	60
15th.	VK4XY	392	98
16th.	ZL3AKM	385	51
Eq. 17th.	VK4RD	381	102
Eq. 17th.	VK2BV multi-op	381	98
19th.	VK2BMU	365	91
20th.	ZL2AGD	359	48
21st.	VK7ARN	346	77
22nd	VK7ZE	335	66
-	VK3JWZ	321	75
23rd.	VK2EPH	313	78
24th.	VK4SN	292	70
25th.	VK4AMC	246	73
26th.	VK2ENG/Qrp	228	46
27th.	ZL4AS	226	28
28th.	VK4ATH/Qrp	217	52
29th.	VK2YJS	188	50
30th.	VK2GR	162	62
31st.	VK2ACH	135	42
32nd.	VK5ZUC/Qrp	108	26
33rd.	VK6ADI	88	15
34th.	VK2BJT	79	18
35th.	VK3BKO	54	27
36th.	VK5YX	46	11
37th.	ZL4IM	37	7

Category 9 (CW)

	Call sign	Score	Contacts
1st.	ZL3IX	306	43
2nd.	VK2CCC	240	41
3rd.	VK3QB	233	36
4th.	ZL2JU	218	32
5th.	VK3IO/Qrp	196	37
6th.	VK4IZ	166	41
7th.	VK3TSN	152	32
8th.	ZL3ARC	132	21
9th.	VK2ADB	117	30
10th.	VK2ENG	77	25
11th.	VK3XU	66	14
12th.	VK2AVQ	59	16
13th.	ZL3AKM	55	16

Category 8 (QRP Phone)

	Call sign	Score	Contacts
1st.	VK3IO	797	118
2nd.	VK2ENG	228	46
3rd.	VK4ATH	217	52
4th.	VK5ZUC	108	26

VK3JWZ Phone score of 218 is ineligible.

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Silent Key

Theo Marks VK4MU – SK

On behalf of the amateur radio operators of Australia, we pay homage to one of our most respected members.

Whilst always interested in the 'dark art' of radio as a youngster in the 1930s, he would play records on air after the official radio stations had closed down for the evening. His music broadcasts grew in popularity so much so that he would receive requests to play certain musical items by telephone, and his record collection grew by donations from listeners.

When WW II broke out he promptly enlisted as a driver and served with the AIF in the Middle East. While serving there in the field as a driver it happened one day that the duty wireless operator was ill.

When Theo heard this he volunteered to the officer present that he could read and transmit Morse code. He stood in for the missing person and was subsequently seconded to the signals branch; spent a hectic 6 months in Officer Training prior to training signals personnel in Morse code and procedures.

On the return of the AIF to Australia to defend our homeland against the advancing Japanese, Theo was posted to the University of Queensland.

The site had been taken over by the military and as Theo was a communications specialist, he was posted to General MacArthur's and General Blamey's Signals HQ for the entire South West Pacific theatre. There at St Lucia, for three pressure packed years, he handled top secret communications traffic and whilst proud of his work, always kept his oath of secrecy.

After the war, Theo returned to 'Civvy Street' and to amateur radio. His callsign VK2ATM became VK4MU when he moved to Queensland. VK4MU became well known on the air and his cultured voice was a signature of the 40 metre "Coral Coast Net" for nearly 30 years.

He was involved from 1992 until 2006 in jointly broadcasting on HF radio the Wireless Institute of Australia, Queensland Division's weekly News. The news broadcast was a joint effort each week with Bruce VK4AMV and before that with Jack VK4AGY; each week the news was preceded by an informal net with Theo making regular contact with fellow amateurs.

Theo was active in the Wireless Institute of Australia as Divisional Secretary in the 1980s, and his tact, wisdom and tolerance were greatly valued. Virtually every honour that his life long hobby could bestow upon him was granted but in his unassuming way, he never boasted of his achievements but continued to do his bit for his fellow amateur.

Farewell Theo, you were a true gentleman of the airwaves.

Contributed by Guy Minter VK4GUY and Malcolm McIntosh VK4ZMM.

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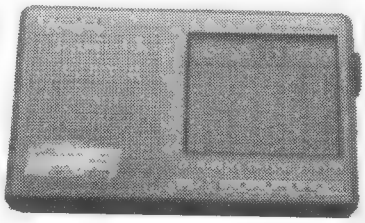
DEGEN 1103 HF Receiver

Pocket sized, 100 kHz-29,999Khz



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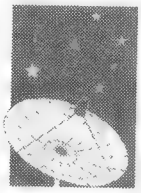

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FOR SALE NSW

POWERTECH 13.8 volt 40 amp Switch Mode adjustable power supply MP3090. In pristine cond. 2006 model including power cord and instruction manual. $230 + Postage. Brian VK2MQ. Ph. (02)69471213, Mobile 0407004071, Email oey66@bigpond.com (10)

HILLS TELEMAST galvanised, telescopic, thick walled steel, excellent condition, $125 KENPRO KR-800S Heavy Duty Antenna Rotator with top & bottom clamps, cable, plugs, rotator has had very little use, excellent condition $550 LAFAYETTE (USA) Vehicle Ignition Suppression Full Kit New $75 YAESU MUSEN FT-203R VHF FM Hand Held covers both Marine VHF & amateur 2 metre frequencies. New battery pack, full 5 watts $125. All Items located in Blacktown, Western Sydney. Andy VK4FBI Email: vk4fbi@yahoo.com.au or phone: 0405-089161 QTHR (10)

VHF HANDHELDS. Two Icom IC-F3 Top quality made in Japan. Cover 136 to 174 MHz. Alphanumeric display shows frequency in use. Used but in good condition, programmed with thirty two 2 metre frequencies. Can get programming changed to suit you. Thirty repeater channels should cover every Australian repeater. Five watts. Similar to CB IC-40s or Amateur IC-T2, key pad is a little different to T2. They use the same batteries. Radios are ready to go with no risky ebay business. Serial numbers will be given later. $25 per radio. Another $15 with Antenna. You can buy a battery pack to put in your own cells for about $22 at most 2 way radio shops. I will sell you a good second hand rechargable pack at half price. Also UHF handhelds usable on commercial frequencies and for UHF C.B. prices are negotiable. Victor VK2XVS.PH.0435096995 email: victorstafford@hotmail.com QTHR (10)

HILLS two section winch up fold over galvanised Tower, extends to 11 metres. Hills base plate included. Ideal for a suburban block. Excellent condition. Guy hooks welded on tower. Tower currently stored at Blacktown, Western Sydney, NSW. Any inspection welcome! $750 ONO. Selling as moving house! Andy VK4FBI 0405-089161 PO BOX 1166, Coolangatta, NSW (9)

SHACK CLEAROUT valves, bases and screening cans. 6146Bs (new), 807s, 5763 and many others. All free when collected (make a donation to your favourite charity). VK2BPB tel 0297454410 for address to collect in Sydney (9)

THE OZI-WIRE, weatherproof, no resistor broad band emergency or backup antenna kit. A 7 m wire aerial capable of 3.5 MHz to 30 MHz continuous transmit coverage (SWR > 2:1) for Amateur, VK737, Outpost, marine and SWL use.(RX 500 kHz to 60 MHz) Ozi-Wire BBA Kit $99 + $5.50 postage to most VK. The Ozi-Pole multi-band portable dipole (40 m to 6 m) Kit and the optional 80 m coil kit are still available. Ozi-Pole PD Kit $99 or optional 80 m coil Kit $35 + Postage. Both Antenna kits handle 100 watts PEP (30 watts AM/FM/CW). Soon to be released are a 3 element 2 metre Yagi kit and a radio data interface kit for PSK31 etc. Quality Kits available from the Mid North Coast Amateur Radio Group Inc., PO Box 505 Bellingen NSW 2454. http//www.mncarg.inc/ or mncarg@yahoo.com.au (P)

WANTED NSW

My Yaesu FT-767GX transceiver will not transmit. I suspect that the finals have blown. Is there any qualified technician that may be able help? Please contact me: 02 6343 1469. Graham. (10)

COLLINS 312B-4 station control unit, preferably in good operating and physical condition. If you have one not being used and are prepared to part with it, please contact me. Steve VK2XWL; email steve.b@internode.on.net Phone QTH 02 4952 5443 of mobile on 0412194513. (10)

FOR SALE VIC

ICOM IC-701PS for sale. Has a fault in the voltage regulator circuit, otherwise O.K. $140. VK3BV. Phone 59750306. Mornington Vic. (10)

ICOM IC-T90A handheld transceiver 6 m, 2 m, 70 cm adj. power to 5 watts radio will scan point 500 kHz to 1000 MHz. Including charger still under warranty S/N. 0701408 only $285. YAESU FT-1807M 70 cm mobile TX adjustable power to 50 watts used as base station only, Tx 400-470 MHz, still under warranty S/N 7F090015 only $225. DIAWA LP Filter 1000 watts Model FD30M $50. Stan VK3BNJ (03) 9743 6708 bkorczynski@optusnet.com.au (10)

PHILLIPS FM RADIOPHONE TYPE 1677CY. This FM Base station has the following valve lineup in the transmitter. 12AT7, QQE 02/5, QQE 02/5, QQV06-40A. Receiver is the solid-state receiver section from a FM1680C. An attached paper tag says that it was on 166.54 MHz. I can email a photo if required. Offers to Roderick Wall email: vk3yc@wia.org.au or 0413 074386. (10)

ICOM IC-R10 hand held receiver with SSB, S/N. 002829 wanting $425.00 YAESU antenna tuner FC-700 Serial No.3K75101 wanting $250.00. ELECTROPHONE 2 Amp DC power supply Model No. pse122 wanting $30.00. Call Noel VK3FNBH on 03 93640125 or 0448331437 (9)

BARRETT mobile radio model SB 250 with Flying Doctor, five VKS737 and amateur frequencies 3.620 kHz, 7075 kHz and 7080 kHz and SOTA. Comes complete with Terlin antenna base and spring. Antenna not suitable for ham use. Pick up and see working at Wonthaggi, Victoria. Price $500 Contact Lindsay VK3IQ at [03] 5672 2563 or email vk3iq@nex.net.au (9)

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WANTED VIC

HP TRACKING GENERATOR Model 8444A, preferably with Option 059 or 058. I would consider a unit without either option. Instrument must be in good working condition. Please phone Garth VK3BBK (QTHR) on 03 5968 5408 daytime or evening. Email dylfrd@yahoo.com.au but would prefer phonecall. (9)

EARLY YAESU HF transceiver FTDX-401 OR FT-DX560. These were in use around the late 1960s to 70s. Working or with a fault, otherwise complete and mechanically sound. Preferably not from smoker. Happy to discuss suitable remuneration, external appearance reasonable for age. Contact: Ian VK3XI QTHR email ikeenan@bigpond.com.au or Ph (03) 9580 6627 (9)

I am looking for a GENERAL RADIO GR 1931A modulation monitor. Thanks. John Eggington VK3EGG. Mob: 0409 234 672 Email: vk3egg@optusnet.com.au Mobile: 0409 234 672 (9)

My cousin in Latvia, YL2GRE, needs a QUARTZ FREQUENCY STABILIZER to repair his home made transceiver. Where do I go to buy one? Jack Ziedars. Tel: 03 9841 9373 jekabs@techinfo.com.au (9)

FOR SALE QLD

VHF/UHF Quality Hidaka Mobile Antenna with UHF Base. Length 83 cm. 146/435 MHz dualband, slim-line chrome base. Will handle 200 watts. Loading Coil in middle. Great performer.! $45 inc. postage in Australia. Andy VK4FBI QTHR vk4fbi@wia.org.au (10)

YAESU transceiver FT-1000MP-V 200 W version ext PS plus Yaesu VL-1000 1000 W linear amp, ext PS, 2 filters for transceiver, Yaesu desk and h/held mike, Morse key, Heil boom mike. All together $5000 ONO. Bonus h/held Yaesu FT-530 dual band. Call VK4YV QTHR 8 km south of Kenilworth Ph 07 54 723 097 email vk4yv@yahoo.com Your callsign in Subject line please (9)

FOR SALE SA

LINEAR AMPLIFIER with all bands 160 - 10 metres. 1200 Watts PEP SSB input; 1000 Watts CW. YAESU model FL-2100Z, in original packaging inc. handbook. S/N 2F090249. Sold with companion Yaesu 1200 Watt antenna tuning unit incorporating RMS/peak reading power meters model FC-102, S/N 2L030003, with handbook. Good clean well cared for condition, minor scratches commensurate with age. Price for both units $1100 ONO, plus postage. Don Peterkin VK5DON. Mobile 0418919299 vk5don@westnet.com.au PO Box 12, Alford SA 5555 (9)

VK5JST Antenna Analyser kits. [see AR article May 2006] Build yourself an extremely useful item for your shack, and improve your HF antenna efficiency. For more details see www.scarc.org.au; contact SCARC PO Box 333 Morphett Vale SA 5162, or email: kits@scarc.org.au (P)

WANTED SA

Seeking a NOBLE 250K DUAL POTENTIOMETER marked as follows: NOBLE C87-021-OB1-250KΩ X2AB It is a replacement for a pot used in a 1960's vintage Pioneer SX 44 Tuner Amplifier. I can provide a photograph of the pot, Pioneer Parts List Number and Pioneer Schematic as necessary. Contact Bruce VK5HN 08 86425930 or 0400103898 (10)

FOR SALE TAS

CODAN 8525 RFDS 4X4 chnls very good condition $350 Icom IC-HM7 dynamic microphone built-in pre-amp never opened $60. MANSON ep820 18 Amp cont Pwr Supply X cond $120. VK7FSTM Dale Wright 56 Gardiners Creek Road, St Mary's, Tasmania 7215 (03) 6372 2337 (9)

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50 ft (15 m) TILTOVER ANTENNA TOWER with rotator and cabling as is where is. Price is $800. Contact John VK7KCC on 0364255247. Email: tassiejohn@internode.on.net (9)

WANTED TAS

KENWOOD TS-430S SP 430 Headphones HS5/HS6 must be in good working condition some mods okay. DUAL BAND H/H 2 m / 70 cm prefer Kenwood or Icom. Contact Dale VK7FSTM (03) 6372 2337 dewright 61@hotmail.com (10)

OPERATING MANUAL for Marconi 2955 radio communications test set. Will pay all costs for photocopying, postage etc. Ph. (03) 64384204 (9)

TYPE 3 MKII suitcase TXRX Complete GC Air tested will pay handsome price VK7ZW 03 64 262609 (9)

Looking for a reasonably priced Yaesu FRG-7000. Contact Martin SWL I70067 QTHR (03) 633 18705 (9)

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Hi, I am Dr Alex, you may have heard of me as I have happy clients in Australia. I have for sale different QRO Parts (valves, relays, coils, capacitors, insulators etc).

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ur4ll@bk.ru ur4ll@gmx.com

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Broadcast details

VK1 VK1WIA: Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.

VK2 VK2WI: Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning..

Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.

VK3 VK1WIA: Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.130,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 438.075 VK3RMU Mt St Leonard.

VK4 VK1WIA: Sunday 0900 local via HF and major VHF/UHF repeaters.

VK5 VK5WI: Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975

VK6 VK6WIA: Sunday 0900 local, on 1.865, 3.582, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120, 50.150, 146.700 and 438.525 MHz. Country relays on 3.582 MHz and major repeaters.

Repeated Sunday, 1900 local, on 1.865, 3.565, 146.700 and 438.525 MHz. Country relays on major repeaters.

Also in 'Realaudio' format from the VK6WIA website.

VK7 VK7WI: Sunday 0900 local, on 1.840 AM and 3.570 MHz and on major repeaters.

VK7 regional news follows at 0930 local, on 7.090 and 14.130 MHZ, and on major repeaters.

VK8 Sunday 0900 local, on 3.555, 7.050, 10.130 and 146.900 MHz.

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.

Mining gold on the Magic Band

Noel at the operating position.

The amateur in his shack:

Noel Sanders VK6ZAK Kalgoorlie

Brian Cleland VK5BC

Noel's home station consists of a Yaesu FT-1000 MkV with a Quadra VL-1000 amp, a Yaesu FTV-1000 50 MHz transverter and an Icom IC-7000. The IC-7000 is mainly used to monitor 50 MHz.

His antennas are a 4-element KLM KT34 tribander, a G5RV and a 6 m & 2 m 2-element quad. Noel's favourite band is 6 m and he also enjoys 20 m. The pictures show Noel in his shack and his antennas.

The HF triband beam.

(See story in **VHF – an expanding world,** *page 49)*

The nested two element quads for the six and two metre bands.

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